

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT).

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
14 June 2001 (14.06.2001)

PCT

(10) International Publication Number  
**WO 01/42434 A1**

(51) International Patent Classification<sup>7</sup>: C12N 9/00,  
9/10, 1/20, 15/00, C07H 21/02, 21/04

Lincoln Avenue, Rahway, NJ 07065-0907 (US). **MET-  
ZKER, Michael, L.** [US/US]; 126 East Lincoln Avenue,  
Rahway, NJ 07065-0907 (US).

(21) International Application Number: PCT/US00/33065

(74) Common Representative: **MERCK & CO., INC.**; 126  
East Lincoln Avenue, Rahway, NJ 07065-0907 (US).

(22) International Filing Date: 7 December 2000 (07.12.2000)

(25) Filing Language:

English

(81) Designated States (*national*): CA, JP, US.

(26) Publication Language:

English

(84) Designated States (*regional*): European patent (AT, BE,  
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,  
NL, PT, SE, TR).

(30) Priority Data:

60/169,970

9 December 1999 (09.12.1999) US

**Published:**

— With international search report.

— Before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments.

(71) Applicant (*for all designated States except US*): **MERCK  
& CO., INC.** [US/US]; 126 East Lincoln Avenue, Rahway,  
NJ 07065-0907 (US).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **LIU, Xiaomei**  
[CN/US]; 126 East Lincoln Avenue, Rahway, NJ  
07065-0907 (US). **BAI, Chang** [CN/US]; 126 East

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*



**WO 01/42434 A1**

(54) Title: DNA MOLECULES ENCODING HUMAN NHL, A DNA HELICASE

(57) Abstract: The present invention disclosed isolated nucleic acid molecules (polynucleotides) which encode NHL, a putative DNA helicase. The present invention in turn relates to recombinant vectors and recombinant hosts which contain a DNA fragment encoding NHL, substantially purified forms of associated NHL, associated mutant proteins, and methods associated with identifying compounds which modulate NHL, which will be useful in the treatment of various neoplastic disorders. Both a genomic clone containing regulatory and intron sequences, as well as the exon structure and open reading frame of human NHL are disclosed.

5

## TITLE OF THE INVENTION

DNA MOLECULES ENCODING HUMAN NHL, A DNA HELICASE

## 10 CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit, under 35 U.S.C. §119(e), of U.S. provisional application 60/169,970 filed December 9, 1999.

## STATEMENT REGARDING FEDERALLY-SPONSORED R&amp;D

15 Not Applicable

## REFERENCE TO MICROFICHE APPENDIX

Not Applicable

20

## FIELD OF THE INVENTION

The present invention relates in part to isolated nucleic acid molecules (polynucleotides) which encode NHL, a putative DNA helicase. The present invention also relates to recombinant vectors and recombinant hosts which contain a

25 DNA fragment encoding NHL, substantially purified forms of associated NHL, associated mutant proteins, and methods associated with identifying compounds which modulate NHL, which will be useful in the treatment of various neoplastic disorders, given that this gene is located at 20q13.3 and immediately adjacent to M68/DcR3, which is involved in tumor growth. Also included within the present

30 invention is a human genomic fragment representing this portion of the human genome, along with three additional genes (M68/DcR3, SCLIP, and ARP).

## BACKGROUND OF THE INVENTION

Naumovski et al. (1985, *Mol. Cell Biol.* 5:17-26; Reynolds et al. (1985 *Nucleic*  
5 *Acid Res* 13:2357-2372) and Weber et al. (1990 *EMBO J.* 9:1437-1447) disclose  
members of the RAD3/ERCC2 gene family of DNA helicases.

It is known that several chemotherapeutic agents inhibit helicases, including  
actinomycin C1, daunorubicin and nogalamycin (Tuteja, et al., 1997, *Biochem.*  
*Biophys. Res. Comm.* 236(3):636-640), and a prostate cancer drug, CI-958 (Lun, et  
10 al., 1998, *Cancer Chemother. Pharmacol.* 42(6):447-453). In addition, some  
topoisomerases have been shown to have anti-cancer activity.

Despite the identification of the aforementioned helicase-encoding genes and  
chemotherapeutic agents, it would be advantageous to identify additional genes which  
reside within chromosomal regions associated with a disease state such as cancer as  
15 well as a gene which encodes a type of protein which may be associated with that  
disease. The present invention addresses and meets this need by disclosing a DNA  
molecule encoding a DNA helicase with a chromosomal location suggestive of  
association with cancer.

## 20 SUMMARY OF THE INVENTION

The present invention relates to an isolated or purified nucleic acid molecule  
(polynucleotide) which encodes a novel mammalian DNA helicase.

The present invention also relates to an isolated nucleic acid molecule  
(polynucleotide) which encodes mRNA which expresses a novel human DNA  
25 helicase, NHL.

A preferred aspect of the present invention relates to an isolated or purified  
DNA molecule which encodes human NHL, the nucleotide sequence as set forth in  
Figure 1A-B and SEQ ID NO:1.

The present invention also relates to biologically active fragments or mutants  
30 of SEQ ID NO:1 which encode a mRNA molecule expressing a novel DNA helicase,  
NHL. Any such biologically active fragment and/or mutant will encode either a  
protein or protein fragment which at least substantially mimics the biological  
properties of the human NHL protein disclosed herein in Figure 2 and as set forth as  
SEQ ID NO:2. Any such polynucleotide includes but is not necessarily limited to

nucleotide substitutions, deletions, additions, amino-terminal truncations and carboxy-terminal truncations such that these mutations encode mRNA which express a functional NHL protein in a host cell, so as to be useful for screening for agonists and/or antagonists of NHL activity.

5       The present invention also relates to recombinant vectors and recombinant hosts, both prokaryotic and eukaryotic, which contain the substantially purified nucleic acid molecules disclosed throughout this specification.

      The present invention also relates to a substantially purified form of a human NHL protein which comprises the amino acid sequence disclosed in Figure 2 and set  
10   forth as SEQ ID NO:2.

      A preferred aspect of this portion of the present invention is a NHL protein which consists of the amino acid sequence disclosed in Figure 2 and set forth as SEQ ID NO:2.

      Another preferred aspect of the present invention relates to a substantially  
15   purified NHL protein, preferably a human NHL protein, obtained from a recombinant host cell containing a DNA expression vector comprises a nucleotide sequence as set forth in SEQ ID NO:1 and expresses the respective NHL protein. It is especially preferred is that the recombinant host cell be a eukaryotic host cell, such as a mammalian cell line.

20       The present invention also relates to biologically active fragments and/or mutants of a NHL protein comprising the amino acid sequence as set forth in SEQ ID NO:2, including but not necessarily limited to amino acid substitutions, deletions, additions, amino terminal truncations and carboxy-terminal truncations such that these mutations provide for proteins or protein fragments of diagnostic, therapeutic or  
25   prophylactic use and would be useful for screening for selective modulators, including but not limited to agonists and/or antagonists for human NHL pharmacology.

      A preferred aspect of the present invention is disclosed in Figure 2 and is set forth as SEQ ID NO:2, a respective amino acid sequence which encodes human NHL. Characterization of one or more of these DNA helicase-like proteins allows for  
30   screening methods to identify novel NHL modulators that may be useful in the treatment of human neoplastic disorders. The modulators selected through such screening and selection protocols may be used alone or in conjunction with other cancer therapies. As noted above, heterologous expression of a NHL protein will allow the pharmacological analysis of compounds which modulate NHL activity and



hence may be useful in various cancer therapies. To this end, heterologous cell lines expressing a NHL protein can be used to establish functional or binding assays to identify novel NHL modulators.

The present invention also relates to polyclonal and monoclonal antibodies  
5 raised in response to either the NHL or a biologically active fragment of NHL.

The present invention relates to transgenic mice comprising altered genotypes and phenotypes in relation to NHL and its *in vivo* activity.

The present invention also relates to NHL fusion constructs, including but not limited to fusion constructs which express a portion of the NHL protein linked to  
10 various markers, including but in no way limited to GFP (Green fluorescent protein), the MYC epitope, and GST. Any such fusion constructs may be expressed in the cell line of interest and used to screen for NHL modulators.

Therefore, the present invention relates to methods of expressing mammalian NHL, and preferably human NHL, biological equivalents disclosed herein, assays  
15 employing these gene products, recombinant host cells which comprise DNA constructs which express these proteins, and compounds identified through these assays which act as agonists or antagonists of NHL activity.

The present invention also relates to the isolated genomic sequence which comprises SEQ ID NO:1, a 115 kb genomic fragment set forth herein as SEQ ID  
20 NO:3. As especially preferred aspect of this portion of the invention is the region of the genomic fragment of SEQ ID NO:3 which comprises the regulatory and coding regions of human NHL, as well as intervening sequences (introns). This 115 kb fragment contains at least the coding region of four genes, NHL, M68/DcR3, SCLIP and ARP. As discussed herein, it has been shown that this region of chromosome 20  
25 is associated with tumor growth. Therefore, an aspect of this invention also comprises the use of one or more regions of this 115 kb genomic sequence to identify compounds which up or downregulate expression of one or more of the genes localized within this 115 kb region, wherein this up or down regulation results in an interference of tumor growth. For example, a transcription element of one of these  
30 four genes may be responsible for M68/DcR3 ( and/or NHL) overexpression in tumors, and if M68 or NHL overexpression in tumors has a caustic role, blockage of M68/DcR3 or NHL overexpression in tumors by interfering with this transcription site will be useful.

It is an object of the present invention to provide an isolated nucleic acid molecule (e.g., SEQ ID NO:1) which encodes novel form of human NHL, or fragments, mutants or derivatives of human NHL as set forth in Figure 2 and SEQ ID NO:2. Any such polynucleotide includes but is not necessarily limited to nucleotide  
5 substitutions, deletions, additions, amino-terminal truncations and carboxy-terminal truncations such that these mutations encode mRNA which express a protein or protein fragment of diagnostic, therapeutic or prophylactic use and would be useful for screening for selective modulators of human NHL activity.

It is a further object of the present invention to provide the mammalian, and  
10 especially human, NHL proteins or protein fragments encoded by the nucleic acid molecules referred to in the preceding paragraph.

It is a further object of the present invention to provide recombinant vectors and recombinant host cells which comprise a nucleic acid sequence encoding mammalian, and especially human, NHL protein and biological equivalent thereof.

15 It is an object of the present invention to provide a substantially purified form of human NHL, as set forth in Figure 2 and SEQ ID NO:2.

Is another object of the present invention to provide a substantially purified recombinant form of a NHL protein which has been obtained from a recombinant host cell transformed or transfected with a DNA expression vector which comprises and  
20 appropriately expresses a complete open reading frame as set forth in SEQ ID NO:1, resulting in a functional, processed form of NHL. It is especially preferred is that the recombinant host cell be a eukaryotic host cell, such as a mammalian cell line.

It is an object of the present invention to provide for biologically active fragments and/or mutants of mammalian, and especially human, NHL, such as set  
25 forth in SEQ ID NO:2, including but not necessarily limited to amino acid substitutions, deletions, additions, amino terminal truncations and carboxy-terminal truncations such that these mutations provide for proteins or protein fragments of diagnostic, therapeutic and/or prophylactic use.

It is also an object of the present invention to use NHL proteins or biological  
30 equivalent to screen for modulators, preferably selective modulators, of human NHL activity. Any such compound may be useful in screening for and selecting compounds active against human neoplastic disorders.

As used herein, "substantially free from other nucleic acids" means at least 90%, preferably 95%, more preferably 99%, and even more preferably 99.9%, free of

other nucleic acids. Thus, a human NHL DNA preparation that is substantially free from other nucleic acids will contain, as a percent of its total nucleic acid, no more than 10%, preferably no more than 5%, more preferably no more than 1%, and even more preferably no more than 0.1%, of non-NHL nucleic acids. Whether a given  
5 NHL DNA preparation is substantially free from other nucleic acids can be determined by such conventional techniques of assessing nucleic acid purity as, *e.g.*, agarose gel electrophoresis combined with appropriate staining methods, *e.g.*, ethidium bromide staining, or by sequencing.

As used herein, "substantially free from other proteins" or "substantially  
10 purified" means at least 90%, preferably 95%, more preferably 99%, and even more preferably 99.9%, free of other proteins. Thus, a NHL protein preparation that is substantially free from other proteins will contain, as a percent of its total protein, no more than 10%, preferably no more than 5%, more preferably no more than 1%, and even more preferably no more than 0.1%, of non-NHL proteins. Whether a given  
15 NHL protein preparation is substantially free from other proteins can be determined by such conventional techniques of assessing protein purity as, *e.g.*, sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) combined with appropriate detection methods, *e.g.*, silver staining or immunoblotting. As used interchangeably with the terms "substantially free from other proteins" or "substantially purified", the  
20 terms "isolated NHL protein" or "purified NHL protein" also refer to NHL protein that has been isolated from a natural source. Use of the term "isolated" or "purified" indicates that NHL protein has been removed from its normal cellular environment. Thus, an isolated NHL protein may be in a cell-free solution or placed in a different cellular environment from that in which it occurs naturally. The term isolated does  
25 not imply that an isolated NHL protein is the only protein present, but instead means that an isolated NHL protein is substantially free of other proteins and non-amino acid material (*e.g.*, nucleic acids, lipids, carbohydrates) naturally associated with the NHL protein *in vivo*. Thus, a NHL protein that is recombinantly expressed in a prokaryotic or eukaryotic cell and substantially purified from this host cell which does not  
30 naturally (*i.e.*, without intervention) express this protein is of course "isolated NHL protein" under any circumstances referred to herein. As noted above, a NHL protein preparation that is an isolated or purified NHL protein will be substantially free from other proteins will contain, as a percent of its total protein, no more than 10%,

preferably no more than 5%, more preferably no more than 1%, and even more preferably no more than 0.1%, of non-NHL proteins.

As used interchangeably herein, "functional equivalent" or "biologically active equivalent" means a protein which does not have exactly the same amino acid sequence as naturally occurring NHL, due to alternative splicing, deletions, mutations, substitutions, or additions, but retains substantially the same biological activity as NHL. Such functional equivalents will have significant amino acid sequence identity with naturally occurring NHL and genes and cDNA encoding such functional equivalents can be detected by reduced stringency hybridization with a DNA sequence encoding naturally occurring NHL. For example, a naturally occurring NHL disclosed herein comprises the amino acid sequence shown as SEQ ID NO:2 and is encoded by SEQ ID NO:1. A nucleic acid encoding a functional equivalent has at least about 50% identity at the nucleotide level to SEQ ID NO:1.

As used herein, "a conservative amino acid substitution" refers to the replacement of one amino acid residue by another, chemically similar, amino acid residue. Examples of such conservative substitutions are: substitution of one hydrophobic residue (isoleucine, leucine, valine, or methionine) for another; substitution of one polar residue for another polar residue of the same charge (e.g., arginine for lysine; glutamic acid for aspartic acid).

As used herein, the term "mammalian" will refer to any mammal, including a human being.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A-B shows the nucleotide sequence which comprises the open reading frame which encodes human NHL, the nucleotide sequence set forth as SEQ ID NO:1. The initiating Met residue (ATG) and the stop codon (TAG) are underlined.

Figure 2 shows the amino acid sequence of human NHL as set forth in SEQ ID NO:2.

Figure 3 shows the alignment of amino acid sequences of human NHL to ERCC2/RAD3 gene family members. Rep D (*Dictyostelium discoideum*); RAD 3 (*S. cerevisiae*); RAD15 (*S. pombe*) and XP\_GroupD (*Homo sapien*).

Figure 4 shows Northern analysis of NHL expression in multi-human tissues.

Figure 5A-B show the genomic structure of the NHL gene (Figure 5A) and the entire 115 kb genomic region (Figure 5B) containing the NHL, M68/DcR3, SCLIP

and ARP genes.

#### DETAILED DESCRIPTION OF THE INVENTION

The present invention relates to an isolated or purified nucleic acid molecule  
5 (polynucleotide) which encodes a novel mammalian DNA helicase. An especially preferred aspect of this invention relates to an isolated nucleic acid molecule (polynucleotide) which encodes mRNA which expresses a novel human DNA helicase, NHL.

The gene M68/DcR3 is a secreted TNFR member that is overexpressed in a  
10 number of human tumors. M68/DcR3 is located at 20q13.3, a known site that is associated with frequent gene amplification in cancer. M68/DcR3 protein binds to FASL and inhibit FAS mediated apoptosis. Thus, genes tightly linked to M68/DcR3 may be coregulated (e.g. co overexpressed and/or amplified in tumors). During the course of cloning the genomic M68/DcR3 fragment and identifying genes that are  
15 linked to M68/DcR3 at 20q13.3, three genes, including a novel gene that is similar to the Rad3/ERCC2 helicase family, were identified (termed NHL) in the immediately adjacent (overlapping) region. Given NHL's chromosomal location and the frequent association of DNA helicases with human genetic disorders (mutations in DNA helicases have been found associated with multiple diseases, including xeroderma  
20 pigmentosum, Cockayne's syndrome, Bloom's syndrome, and Werner's syndrome), NHL is a candidate for contribution to certain human neoplastic disorders. To this end, the genomic clone for this gene is disclosed and the complete sequence is determined. The transcript was identified through exon prediction using GRAIL2 and sequence alignment to a contiguous 4.5 kilobase region of chromosome 4 (88%  
25 sequence identity). The complete exon structure of NHL was subsequently confirmed by RT-PCR analysis. Multiple sequence alignment of NHL to known helicases showed that NHL contains all the seven critical helicase domains. BLAST analysis of the predicted 1,219 amino acid sequence revealed an approximately 26% sequence identity and 48% sequence similarity to the RAD3/ERCC2 gene family of DNA  
30 helicases (Naumovski et al., 1985 *Mol. Cell Biol.* 5:17-26; Reynolds et al., 1985 *Nucleic Acid Res* 13:2357-72; Weber et al., 1990 *EMBO J.* 9:1437-1447). The mRNA expression pattern of NHL was also examined in multiple human tissues. Radiation hybrid chromosomal mapping reconfirms that it is linked to M68/DcR3 locus.

A preferred aspect of the present invention relates to an isolated or purified DNA molecule which encodes human NHL, the nucleotide sequence as set forth in Figure 1A-B and SEQ ID NO:1, which is as follows:

```

AGTCAGCCCT GCTGCCAGCC AGTGCCGGGT GCTGGGGACT CAGGGAGGCC CGCCGGGACC
5  ACTGCGGGAC AGTGAGCCGA GCAGAAGCTG GAACGCAGGA GAGGAAGGAG AGGGGGCGGT
CAGGGCTCTC AGGAGCCGGG TCCTGGGCAA GCGCAGCCG TTTTCAAATT TTCAGGAAAG
CGGTCTGGCTC AACTCGAGC AGTAAAAAGA TGCCTCTGGG GAGGAGGCCC GTGCAGCTCT
CCGGGCAATG GTGGTGGCTC GGCCTAGAGA GCGGCTAGTG GAACGCAGAC CCTGGTGGGG
GAATGACATC AAGGGAGGAG ACGGGCGGGA CCCCAGATTT CTGCCTGTGG GCGATGGAAG
10 TGAGGTTTAC TGGCCAGCGG AGCCGGACAC AGAACGCGCA AAACGCCGTG TAGGCCTGGA
GGAGCCGAAG AGCAGGCGGA CCCCCTCCGC GGGGGAACAG TTTCCGCCG GAGCACAAG
CAACGGACCG GAAGTGGGGG GCGGAAGTGC AGTGGGCTCA GCGCCGACTG CGCGCCTCTG
CCCAGGAAAA CTCTGAGCTG GCTGACAGCT GGGGACGGGT GCGCGCCCTC GACTGGAGTC
GGTTGAGTTC CTGAGGGACC CCGGTTCTGG AAGGTTGCC GCGGAGACAA GTGAGCAGTC
15 TGTGCCATAG GGATTCTCGA AGAGAACAGC GTTGTGTCCC AGTGACATG CTCGCATCGC
TTACCAGGAG TGCCCAGAC CCTAAGATGT TCGGAGTGGT TTTTTCGCAC AGACCCGAAT
AGCCTGCCCC TCAGCCACGC TCTGTGCCCT TCTGAGAACA GGCTGATATG CCCAAGATAG
TCCTGAATGG TGTGACCGTA GACTTCCCTT TCCAGCCCTA CAAATGCCAA CAGGAGTACA
TGACCAAGGT CCTGGAATGT CTGCAGCAGA AGGTGAATGG CATCCTGGAG AGCCCTACGG
20 GTACAGGGAA GACGCTGTGC CTGCTGTGCA CCACGCTGGC CTGGCGAGAA CACCTCCGAG
ACGGCATCTC TGCCCGAAG ATTGCCGAGA GGGCGCAAGG AGAGCTTTTC CCGGATCGGG
CCTTGTCTATC CTGGGGCAAC GCTGCTGCTG CTGCTGGAGA CCCCATAGCT TGCTACACGG
ACATCCCCAA GATTATTTAC GCCTCCAGGA CCCACTCGCA ACTCACACAG GTCATCAACG
AGCTTCGGAA CACCTCCTAC CGGCCTAAGG TGTGTGTGCT GGGCTCCCGG GAGCAGCTGT
25 GCATCCATCC TGAGGTGAAG AAACAAGAGA GTAACCATCT ACAGATCCAC TTGTGCCGTA
AGAAGGTGGC AAGTCGCTCC TGTCATTTCT ACAACAACGT AGAAGAAAAA AGCCTGGAGC
AGGAGCTGGC CAGCCCCATC CTGGACATTG AGGACTTGGT CAAGAGCGGA AGCAAGCACA
GGGTGTGCCC TTA CTACCTG TCCCGGAACC TGAAGCAGCA AGCCGACATC ATATTCATGC
CGTACAATTA CTTGTTGGAT GCCAAGAGCC GCAGAGCACA CAACATTGAC CTGAAGGGGA
30 CAGTCGTGAT CTTTGACGAA GCTCACAACG TGGAGAAGAT GTGTGAAGAA TCGGCATCCT
TTGACCTGAC TCCCCATGAC CTGGCTTCAG GACTGGACGT CATAGACCAG GTGCTGGAGG
AGCAGACCAA GGCAGCGCAG CAGGGTGAGC CCCACCCGGA GTTCAGCGCG GACTCCCCCA
GCCCAGGGCT GAACATGGAG CTGGAAGACA TTGCAAAGCT GAAGATGATC CTGCTGCGCC
TGGAGGGGGC CATCGATGCT GTTGAGCTGC CTGGAGACGA CAGCGGTGTC ACCAAGCCAG

```

GGAGCTACAT CTTTGAGCTG TTTGCTGAAG CCCAGATCAC GTTTCAGACC AAGGGCTGCA  
 TCCTGGACTC GCTGGACCAG ATCATCCAGC ACCTGGCAGG ACGTGCTGGA GTGTTACCA  
 ACACGGCCGG ACTGCAGAAG CTGGCGGACA TTATCCAGAT TGTGTTCACT GTGGACCCCT  
 CCGAGGGCAG CCCTGGTTCC CCAGCAGGGC TGGGGGCCTT ACAGTCCTAT AAGGTGCACA  
 5 TCCATCCTGA TGCTGGTCAC CGGAGGACGG CTCAGCGGTC TGATGCCTGG AGCACCCTG  
 CAGCCAGAAA GCGAGGGAAG GTGCTGAGCT ACTGGTGCTT CAGTCCCGGC CACAGCATGC  
 ACGAGCTGGT CCGCCAGGGC GTCCGCTCCC TCATCCTTAC CAGCGGCACG CTGGCCCCGG  
 TGTCTCTCTT TGCTCTGGAG ATGCAGATCC CTTTCCCAGT CTGCCTGGAG AACCACACA  
 TCATCGACAA GCACCAGATC TGGGTGGGGG TCGTCCCAG AGGCCCCGAT GGAGCCCAGT  
 10 TGAGCTCCGC GTTTGACAGA CGGTTTTCCG AGGAGTGCTT ATCCTCCCTG GGAAGGCTC  
 TGGGCAACAT CGCCCGCGTG GTGCCCTATG GGCTCCTGAT CTTCTTCCCT TCCTATCCTG  
 TCATGGAGAA GAGCCTGGAG TTCTGGCGGG CCCGCGACTT GGCCAGGAAG ATGGAGGCGC  
 TGAAGCCGCT GTTTGTGGAG CCCAGGAGCA AAGGCAGCTT CTCCGAGACC ATCAGTGCTT  
 ACTATGCAAG GGTGCCGCC CCTGGGTCCA CCGGCGCCAC CTTCTGGCG GTCTGCCGGG  
 15 GCAAGGCCAG CGAGGGGCTG GACTTCTCAG ACACGAATGG CCGTGGTGTG ATTGTCACGG  
 GCCTCCCGTA CCCCCACGC ATGGACCCCC GGGTTGTCTT CAAGATGCAG TTCCTGGATG  
 AGATGAAGGG CCAGGGTGGG GCTGGGGGCC AGTTCCTCTC TGGGCAGGAG TGGTACCGGC  
 AGCAGGCGTC CAGGCTGTG AACCAGGCCA TCGGGCGAGT GATCCGGCAC CGCCAGGACT  
 ACGGAGCTGT CTTCTCTGT GACCACAGGT TCGCCTTTGC CGACGCAAGA GCCCACTGC  
 20 CCTCTGGGT GCGTCCCCAC GTCAGGGTGT ATGACAACTT TGGCCATGTC ATCCGAGACG  
 TGGCCAGTT CTTCCGTGT GCGAGCGAA CTATGCCAGC GCCGGCCCC CGGGCTACAG  
 CACCCAGTGT GCGTGGAGAA GATGCTGTCA GCGAGGCCAA GTCGCTGGC CCCTTCTTCT  
 CCACCAGGAA AGCTAAGAGT CTGGACCTGC ATGTCCCAG CCTGAAGCAG AGGTCTCTAG  
 GGTACCAGC TGCCGGGGAC CCCGAGAGTA GCCTGTGTGT GGAGTATGAG CAGGAGCCAG  
 25 TTCCTGCCC GCGAGGCCC AGGGGGCTGC TGGCCGCCCT GGAGCACAGC GAACAGCGGG  
 CGGGGAGCCC TGGCGAGGAG CAGGCCCACA GCTGCTCCAC CCTGTCCCTC CTGTCTGAGA  
 AGAGGCCGGC AGAAGAACCG CGAGGAGGGA GGAAGAAGAT CCGGCTGGTC AGCCACCCGG  
 AGGAGCCCGT GGCTGGTGCA CAGACGGACA GGGCCAAGCT CTTTCATGGT GCCGTGAAGC  
 AGGAGTTGAG CCAAGCCAAC TTTGCCACCT TCACCCAGGC CCTGCAGGAC TACAAGGGTT  
 30 CCGATGACTT CGCCGCCCTG GCCGCTGTC TCGGCCCCCT CTTTGCTGAG GACCCCAAGA  
 AGCACAACCT GCTCCAAGGC TTCTACCAGT TTGTGCGGCC CCACCATAAG CAGCAGTTTG  
 AGGAGGTCTG TATCCAGCTG ACAGGACGAG GCTGTGGCTA TCGGCTGAG CACAGCATTC  
 CCCGAAGGCA GCGGGCACAG CCGGTCTGG ACCCACTGG AAGAACGGCG CCGGATCCCA  
 AGCTGACCGT GTCCACGGCT GCAGCCCAGC AGCTGGACCC CCAAGAGCAC CTGAACCAGG

GCAGGCCCCA CCTGTCGCCC AGGCCACCCC CAACAGGAGA CCCTGGCAGC CAACCACAGT  
 GGGGGTCTGG AGTGCCCAGA GCAGGGAAGC AGGGCCAGCA CGCCGTGAGC GCCTACCTGG  
 CTGATGCCCC CAGGGCCCTG GGGTCCGCGG GCTGTAGCCA ACTCTTGGCA GCGCTGACAG  
 CCTATAAGCA AGACGACGAC CTCGACAAGG TGCTGGCTGT GTTGGCCGCC CTGACCACTG  
 5 CAAAGCCAGA GGACTTCCCC CTGCTGCACA GGTTCAGCAT GTTTGTGCGT CCACACCACA  
 AGCAGCGCTT CTCACAGACG TGCACAGACC TGACCGGCCG GCCCTACCCG GGCATGGAGC  
 CACCGGGACC CCAGGAGGAG AGGCTTGCCG TGCCTCCTGT GCTTACCCAC AGGGCTCCCC  
 AACCAGGCCC CTCACGGTCC GAGAAGACCG GGAAGACCCA GAGCAAGATC TCGTCCTTCC  
 TTAGACAGAG GCCAGCAGGG ACTGTGGGGG CGGGCGGTGA GGATGCAGGT CCCAGCCAGT  
 10 CCTCAGGACC TCCCCACGGG CCTGCAGCAT CTGAGTGGGG CCTCTAGGAT GTGCCCAGCC  
 TGCCACACCG CCTCCAGGAA GCAGAGCGTC ATGCAGGTCT TCTGGCCAGA GCCCCAGTGA  
 GTGCCCACGG AGGCCCCCAG CACACCCAAC GTGGCTTGAT CACCTGCCTG TCCAGCTCTG  
 GTGGGCCAAG AACCACCCA ACAGAATAGG CCAGCCCATG CCAGCCGGCT TGGCCCGCTG  
 CAGGCCTCAG GCAGGCGGGG CCCATGGTTG GTCCCTGCGG TGGGACCGGA TCTGGGCCTG  
 15 CCTCTGAGAA GCCCTGAGCT ACCTGGGGT CTGGGGTGGG TTTCTGGGAA AGTGCTTCCC  
 CAGAACTTCC CTGGCTCCTG GCCTGTGAGT GGTGCCACAG GGGCACCCCA GCTGAGCCCC  
 TCACCGGGAA GGAGGAGACC CCCGTGGGCA CGTGTCCACT TTTAATCAGG GGACAGGGCT  
 CTCTAATAAA GCTGCTGGCA GTGCCC (SEQ ID NO:1).

The above-exemplified isolated DNA molecule shown in Figure 1A-B and  
 20 SEQ ID NO:1 comprise 4946 nucleotides, with an initiating Met at nucleotides 828-  
 830 and a "TAG" termination codon at nucleotides 4585-4587. The initiating Met and  
 TAG termination codon are underlined.

The present invention also relates to biologically active fragments or mutants  
 of SEQ ID NO:1 which encode a mRNA molecule expressing a novel DNA helicase,  
 25 NHL. Any such biologically active fragment and/or mutant will encode either a  
 protein or protein fragment which at least substantially mimics the biological  
 properties of the human NHL protein disclosed herein in Figure 2 and as set forth as  
 SEQ ID NO:2. Any such polynucleotide includes but is not necessarily limited to  
 nucleotide substitutions, deletions, additions, amino-terminal truncations and carboxy-  
 30 terminal truncations such that these mutations encode mRNA which express a  
 functional NHL protein in a host cell, so as to be useful for screening for agonists  
 and/or antagonists of NHL activity.

The isolated nucleic acid molecules of the present invention may include a  
 deoxyribonucleic acid molecule (DNA), such as genomic DNA and complementary



DNA (cDNA), which may be single (coding or noncoding strand) or double stranded, as well as synthetic DNA, such as a synthesized, single stranded polynucleotide. The isolated nucleic acid molecule of the present invention may also include a ribonucleic acid molecule (RNA).

5       The present invention also relates to recombinant vectors and recombinant hosts, both prokaryotic and eukaryotic, which contain the substantially purified nucleic acid molecules disclosed throughout this specification.

      The degeneracy of the genetic code is such that, for all but two amino acids, more than a single codon encodes a particular amino acid. This allows for  
10   the construction of synthetic DNA that encodes the NHL protein where the nucleotide sequence of the synthetic DNA differs significantly from the nucleotide sequence of SEQ ID NO:1 but still encodes the same NHL protein as SEQ ID NO:2. Such synthetic DNAs are intended to be within the scope of the present invention. If it is desired to express such synthetic DNAs in a particular host cell  
15   or organism, the codon usage of such synthetic DNAs can be adjusted to reflect the codon usage of that particular host, thus leading to higher levels of expression of the NHL protein in the host. In other words, this redundancy in the various codons which code for specific amino acids is within the scope of the present invention. Therefore, this invention is also directed to those DNA sequences  
20   which encode RNA comprising alternative codons which code for the eventual translation of the identical amino acid, as shown below:

A=Ala=Alanine: codons GCA, GCC, GCG, GCU  
C=Cys=Cysteine: codons UGC, UGU  
D=Asp=Aspartic acid: codons GAC, GAU  
25   E=Glu=Glutamic acid: codons GAA, GAG  
F=Phe=Phenylalanine: codons UUC, UUU  
G=Gly=Glycine: codons GGA, GGC, GGG, GGU  
H=His =Histidine: codons CAC, CAU  
I=Ile =Isoleucine: codons AUA, AUC, AUU  
30   K=Lys=Lysine: codons AAA, AAG  
L=Leu=Leucine: codons UUA, UUG, CUA, CUC, CUG, CUU  
M=Met=Methionine: codon AUG  
N=Asp=Asparagine: codons AAC, AAU  
P=Pro=Proline: codons CCA, CCC, CCG, CCU

Q=Gln=Glutamine: codons CAA, CAG

R=Arg=Arginine: codons AGA, AGG, CGA, CGC, CGG, CGU

S=Ser=Serine: codons AGC, AGU, UCA, UCC, UCG, UCU

T=Thr=Threonine: codons ACA, ACC, ACG, ACU

5 V=Val=Valine: codons GUA, GUC, GUG, GUU

W=Trp=Tryptophan: codon UGG

Y=Tyr=Tyrosine: codons UAC, UAU

Therefore, the present invention discloses codon redundancy which may result in differing DNA molecules expressing an identical protein. For purposes of this  
10 specification, a sequence bearing one or more replaced codons will be defined as a degenerate variation. Also included within the scope of this invention are mutations either in the DNA sequence or the translated protein which do not substantially alter the ultimate physical properties of the expressed protein. For example, substitution of valine for leucine, arginine for lysine, or asparagine for  
15 glutamine may not cause a change in functionality of the polypeptide.

It is known that DNA sequences coding for a peptide may be altered so as to code for a peptide having properties that are different than those of the naturally occurring peptide. Methods of altering the DNA sequences include but are not limited to site directed mutagenesis. Examples of altered properties include but  
20 are not limited to changes in the affinity of an enzyme for a substrate or a receptor for a ligand.

The present invention also relates to recombinant vectors and recombinant hosts, both prokaryotic and eukaryotic, which contain the substantially purified nucleic acid molecules disclosed throughout this specification. The nucleic acid  
25 molecules of the present invention encoding a NHL protein, in whole or in part, can be linked with other DNA molecules, i.e., DNA molecules to which the NHL coding sequence are not naturally linked, to form "recombinant DNA molecules" which encode a respective NHL protein. The novel DNA sequences of the present invention can be inserted into vectors which comprise nucleic acids encoding NHL or a  
30 functional equivalent. These vectors may be comprised of DNA or RNA; for most cloning purposes DNA vectors are preferred. Typical vectors include plasmids, modified viruses, bacteriophage, cosmids, yeast artificial chromosomes, and other forms of episomal or integrated DNA that can encode a NHL protein. It is well within

the purview of the skilled artisan to determine an appropriate vector for a particular gene transfer or other use.

Included in the present invention are DNA sequences that hybridize to SEQ ID NO:1 under stringent conditions. By way of example, and not limitation, a procedure using conditions of high stringency is as follows: Prehybridization of filters containing DNA is carried out for 2 hours to overnight at 65°C in buffer composed of 6X SSC, 5X Denhardt's solution, and 100 µg/ml denatured salmon sperm DNA. Filters are hybridized for 12 to 48 hrs at 65°C in prehybridization mixture containing 100 µg/ml denatured salmon sperm DNA and 5-20 X 10<sup>6</sup> cpm of <sup>32</sup>P-labeled probe. Washing of filters is done at 37°C for 1 hr in a solution containing 2X SSC, 0.1% SDS. This is followed by a wash in 0.1X SSC, 0.1% SDS at 50°C for 45 min. before autoradiography. Other procedures using conditions of high stringency would include either a hybridization step carried out in 5XSSC, 5X Denhardt's solution, 50% formamide at 42°C for 12 to 48 hours or a washing step carried out in 0.2X SSPE, 0.2% SDS at 65°C for 30 to 60 minutes.

Reagents mentioned in the foregoing procedures for carrying out high stringency hybridization are well known in the art. Details of the composition of these reagents can be found in, e.g., Sambrook et al., 1989, *Molecular Cloning: A Laboratory Manual*; Cold Spring Harbor Laboratory, Cold Spring Harbor, New York. In addition to the foregoing, other conditions of high stringency which may be used are well known in the art.

The present invention also relates to a substantially purified form of a human NHL protein which comprises the amino acid sequence (1219 amino acid residues) disclosed in Figure 2 and set forth as SEQ ID NO:2. A preferred aspect of this portion of the present invention is a NHL protein which consists of the amino acid sequence disclosed in Figure 2 and set forth as SEQ ID NO:2, as follows:

```

MPKIVLNGVT VDFPFQPYKC QQEYMTKVLE CLQQKVNIGIL ESPTGTGKTL CLLCTTLAWR
EHLRDGISAR KIAERAQGEL FPDRALSSWG NAAAAAGDPI ACYTDIPKII YASRTHSQLT
QVINELRNTS YRPKVCVLGS REQLCIHPEV KKQESNHLQI HLCRKKVASR SCHFYNNVEE
30 KSLEQELASP ILDIEDLVKS GSKHRVCPYY LSRNLKQQAD IIFMPYNYLL DAKSRRAHNI
DLKGTVVIFD EAHNVEKMCE ESASFDLTPH DLASGLDVID QVLEEQTAA QQGEPPHEFS
ADSPSPGLNM ELEDIAKLKM ILLRLEGAID AVELPGDDSG VTKPGSYIFE LFAEAQITFQ
TKGCILDSLD QIIQHLAGRA GVFTNTAGLQ KLADIIQIVF SVDPSEGSFG SPAGLGALQS
YKVHIHPDAG HRRTAQRSDA WSTTAARKRG KVLSTWCFSP GHSMHELVQR GVRSLILTSG

```

TLAPVSSFAL EMQIPFPVCL ENPHIIDKHQ IWVGVPVPRGP DGAQLSSAFD RRFSEECCLSS  
 LGKALGNIAR VVPYGLLIFF PSYPVMEKSL EFWRARDLAR KMEALKPLFV EPRSKGSFSE  
 TISAYYARVA APGSTGATFL AVCRGKASEG LDFSDTNGRG VIVTGLPYPP RMDPRVVLKM  
 QFLDEMKGQG GAGGQFLSGQ EWYRQQASRA VNQAIGRVIR HRQDYGAVFL CDHRFAFADA  
 5 RAQLPSWVRP HVRVYDNFGH VIRDVAQFFR VAERTMPAPA PRATAPSVRG EDAVSEAKSP  
 GPFFSTRKAK SLDLHVPSLK QRSSGSPAAG DPESLSCVEY EQEPVPARQR PRGLLALEH  
 SEQRAGSPGE EQAHSCSTLS LLSEKRPAEE PRGGRKKIRL VSHPEEPVAG AQTDRAKLFM  
 VAVKQELSQA NFATFTQALQ DYKGSDDFAA LAACLGPLFA EDPKKNLLQ GFYQFVRPHH  
 KQQFEEVCIQ LTGRGCGYRP EHSIPRRQRA QPVLDPGTGR APDPKLTVST AAAQQLDPQE  
 10 HLNQGRPHLS PRPPPTGDPG SQPQWGSVGP RAGKQGQHAV SAYLADARRA LGSAGCSQLL  
 AALTAYKQDD DLDKVLAVLA ALTTAKPEDF PLLHRFSMFV RPHHKQRFSSQ TCTDLTGRPY  
 PGMEPPGPQE ERLAVPPVLT HRAQPQGPSR SEKTGKTQSK ISSFLRQRPA GTVGAGGEDA  
 GPSQSSGPPH GPAASEWGL\* (SEQ ID NO:2).

The present invention also relates to biologically active fragments and/or  
 15 mutants of the human NHL protein comprising the amino acid sequence as set forth in  
 SEQ ID NO:2, including but not necessarily limited to amino acid substitutions,  
 deletions, additions, amino terminal truncations and carboxy-terminal truncations such  
 that these mutations provide for proteins or protein fragments of diagnostic,  
 therapeutic or prophylactic use and would be useful for screening for agonists and/or  
 20 antagonists of NHL function.

Another preferred aspect of the present invention relates to a substantially  
 purified, fully processed NHL protein obtained from a recombinant host cell  
 containing a DNA expression vector which comprises a nucleotide sequence as set  
 forth in SEQ ID NO:1 and expresses the human NHL protein. It is especially  
 25 preferred is that the recombinant host cell be a eukaryotic host cell, such as a  
 mammalian cell line.

As with many proteins, it is possible to modify many of the amino acids of  
 NHL protein and still retain substantially the same biological activity as the wild type  
 protein. Thus this invention includes modified NHL polypeptides which have amino  
 30 acid deletions, additions, or substitutions but that still retain substantially the same  
 biological activity as a respective, corresponding NHL. It is generally accepted that  
 single amino acid substitutions do not usually alter the biological activity of a protein  
 (see, e.g., *Molecular Biology of the Gene*, Watson *et al.*, 1987, Fourth Ed., The  
 Benjamin/Cummings Publishing Co., Inc., page 226; and Cunningham & Wells, 1989,

Science 244:1081-1085). Accordingly, the present invention includes a polypeptide where one amino acid substitution has been made in SEQ ID NO:2 wherein the polypeptide still retains substantially the same biological activity as a corresponding NHL protein. The present invention also includes polypeptides where two or more amino acid substitutions have been made in SEQ ID NO:2 wherein the polypeptide still retains substantially the same biological activity as a corresponding NHL protein. In particular, the present invention includes embodiments where the above-described substitutions are conservative substitutions.

One skilled in the art would also recognize that polypeptides that are functional equivalents of NHL and have changes from the NHL amino acid sequence that are small deletions or insertions of amino acids could also be produced by following the same guidelines, (i.e., minimizing the differences in amino acid sequence between NHL and related proteins. Small deletions or insertions are generally in the range of about 1 to 5 amino acids). The effect of such small deletions or insertions on the biological activity of the modified NHL polypeptide can easily be assayed by producing the polypeptide synthetically or by making the required changes in DNA encoding NHL and then expressing the DNA recombinantly and assaying the protein produced by such recombinant expression.

The present invention also includes truncated forms of NHL which contain the region comprising the active site of the enzyme. Such truncated proteins are useful in various assays described herein, for crystallization studies, and for structure-activity-relationship studies.

The present invention also relates to isolated nucleic acid molecules which are fusion constructions expressing fusion proteins useful in assays to identify compounds which modulate wild-type NHL activity, as well as generating antibodies against NHL. One aspect of this portion of the invention includes, but is not limited to, glutathione S-transferase (GST)-NHL fusion constructs. Recombinant GST-NHL fusion proteins may be expressed in various expression systems, including *Spodoptera frugiperda* (Sf21) insect cells (Invitrogen) using a baculovirus expression vector (pAcG2T, Pharmingen). Another aspect involves NHL fusion constructs linked to various markers, including but not limited to GFP (Green fluorescent protein), the MYC epitope, and GST. Again, any such fusion constructs may be expressed in the cell line of interest and used to screen for modulators of one or more of the NHL proteins disclosed herein.

Any of a variety of procedures may be used to clone NHL. These methods include, but are not limited to, (1) a RACE PCR cloning technique (Frohman, et al., 1988, *Proc. Natl. Acad. Sci. USA* 85: 8998-9002). 5' and/or 3' RACE may be performed to generate a full-length cDNA sequence. This strategy involves using gene-specific oligonucleotide primers for PCR amplification of NHL cDNA. These gene-specific primers are designed through identification of an expressed sequence tag (EST) nucleotide sequence which has been identified by searching any number of publicly available nucleic acid and protein databases; (2) direct functional expression of the NHL cDNA following the construction of a NHL-containing cDNA library in an appropriate expression vector system; (3) screening a NHL-containing cDNA library constructed in a bacteriophage or plasmid shuttle vector with a labeled degenerate oligonucleotide probe designed from the amino acid sequence of the NHL protein; (4) screening a NHL-containing cDNA library constructed in a bacteriophage or plasmid shuttle vector with a partial cDNA encoding the NHL protein. This partial cDNA is obtained by the specific PCR amplification of NHL DNA fragments through the design of degenerate oligonucleotide primers from the amino acid sequence known for other kinases which are related to the NHL protein; (5) screening a NHL-containing cDNA library constructed in a bacteriophage or plasmid shuttle vector with a partial cDNA or oligonucleotide with homology to a mammalian NHL protein. This strategy may also involve using gene-specific oligonucleotide primers for PCR amplification of NHL cDNA identified as an EST as described above; or (6) designing 5' and 3' gene specific oligonucleotides using SEQ ID NO: 1 as a template so that either the full-length cDNA may be generated by known RACE techniques, or a portion of the coding region may be generated by these same known RACE techniques to generate and isolate a portion of the coding region to use as a probe to screen one of numerous types of cDNA and/or genomic libraries in order to isolate a full-length version of the nucleotide sequence encoding NHL.

It is readily apparent to those skilled in the art that other types of libraries, as well as libraries constructed from other cell types or species types, may be useful for isolating a NHL-encoding DNA or a NHL homologue. Other types of libraries include, but are not limited to, cDNA libraries derived from other cells.

It is readily apparent to those skilled in the art that suitable cDNA libraries may be prepared from cells or cell lines which have NHL activity. The selection of cells or cell lines for use in preparing a cDNA library to isolate a cDNA encoding

NHL may be done by first measuring cell-associated NHL activity using any known assay available for such a purpose.

Preparation of cDNA libraries can be performed by standard techniques well known in the art. Well known cDNA library construction techniques can be found for example, in Sambrook et al., 1989, *Molecular Cloning: A Laboratory Manual*; Cold Spring Harbor Laboratory, Cold Spring Harbor, New York. Complementary DNA libraries may also be obtained from numerous commercial sources, including but not limited to Clontech Laboratories, Inc. and Stratagene.

It is also readily apparent to those skilled in the art that DNA encoding NHL may also be isolated from a suitable genomic DNA library. Construction of genomic DNA libraries can be performed by standard techniques well known in the art. Well known genomic DNA library construction techniques can be found in Sambrook, et al., *supra*. One may prepare genomic libraries, especially in P1 artificial chromosome vectors, from which genomic clones containing the NHL gene can be isolated, using probes based upon the NHL nucleotide sequences disclosed herein. Methods of preparing such libraries are known in the art (Ioannou et al., 1994, *Nature Genet.* 6:84-89).

In order to clone a NHL gene by one of the preferred methods, the amino acid sequence or DNA sequence of a NHL or a homologous protein may be necessary. To accomplish this, a respective NHL protein may be purified and the partial amino acid sequence determined by automated sequenators. It is not necessary to determine the entire amino acid sequence, but the linear sequence of two regions of 6 to 8 amino acids can be determined for the PCR amplification of a partial NHL DNA fragment. Once suitable amino acid sequences have been identified, the DNA sequences capable of encoding them are synthesized. Because the genetic code is degenerate, more than one codon may be used to encode a particular amino acid, and therefore, the amino acid sequence can be encoded by any of a set of similar DNA oligonucleotides. Only one member of the set will be identical to the NHL sequence but others in the set will be capable of hybridizing to NHL DNA even in the presence of DNA oligonucleotides with mismatches. The mismatched DNA oligonucleotides may still sufficiently hybridize to the NHL DNA to permit identification and isolation of NHL encoding DNA. Alternatively, the nucleotide sequence of a region of an expressed sequence may be identified by searching one or more available genomic databases. Gene-specific primers may be used to perform PCR amplification of a cDNA of

interest from either a cDNA library or a population of cDNAs. As noted above, the appropriate nucleotide sequence for use in a PCR-based method may be obtained from SEQ ID NO:1 either for the purpose of isolating overlapping 5' and 3' RACE products for generation of a full-length sequence coding for NHL, or to isolate a  
5 portion of the nucleotide sequence coding for NHL for use as a probe to screen one or more cDNA- or genomic-based libraries to isolate a full-length sequence encoding NHL or NHL-like proteins.

This invention also includes vectors containing a NHL gene, host cells containing the vectors, and methods of making substantially pure NHL protein  
10 comprising the steps of introducing the NHL gene into a host cell, and cultivating the host cell under appropriate conditions such that NHL is produced. The NHL so produced may be harvested from the host cells in conventional ways. Therefore, the present invention also relates to methods of expressing the NHL protein and biological equivalents disclosed herein, assays employing these gene products,  
15 recombinant host cells which comprise DNA constructs which express these proteins, and compounds identified through these assays which act as agonists or antagonists of NHL activity.

The cloned NHL cDNA obtained through the methods described above may be recombinantly expressed by molecular cloning into an expression vector (such as  
20 pcDNA3.neo, pcDNA3.1, pCR2.1, pBlueBacHis2 or pLITMUS28) containing a suitable promoter and other appropriate transcription regulatory elements, and transferred into prokaryotic or eukaryotic host cells to produce recombinant NHL. Expression vectors are defined herein as DNA sequences that are required for the transcription of cloned DNA and the translation of their mRNAs in an appropriate  
25 host. Such vectors can be used to express eukaryotic DNA in a variety of hosts such as bacteria, blue green algae, plant cells, insect cells and animal cells. Specifically designed vectors allow the shuttling of DNA between hosts such as bacteria-yeast or bacteria-animal cells. An appropriately constructed expression vector should contain:  
30 an origin of replication for autonomous replication in host cells, selectable markers, a limited number of useful restriction enzyme sites, a potential for high copy number, and active promoters. A promoter is defined as a DNA sequence that directs RNA polymerase to bind to DNA and initiate RNA synthesis. A strong promoter is one which causes mRNAs to be initiated at high frequency. To determine the NHL cDNA sequence(s) that yields optimal levels of NHL, cDNA molecules including but not



limited to the following can be constructed: a cDNA fragment containing the full-length open reading frame for NHL as well as various constructs containing portions of the cDNA encoding only specific domains of the protein or rearranged domains of the protein. All constructs can be designed to contain none, all or portions of the 5' and/or 3' untranslated region of a NHL cDNA. The expression levels and activity of NHL can be determined following the introduction; both singly and in combination, of these constructs into appropriate host cells. Following determination of the NHL cDNA cassette yielding optimal expression in transient assays, this NHL cDNA construct is transferred to a variety of expression vectors (including recombinant viruses), including but not limited to those for mammalian cells, plant cells, insect cells, oocytes, bacteria, and yeast cells. Techniques for such manipulations can be found described in Sambrook, et al., *supra*, are well known and available to the artisan of ordinary skill in the art. Therefore, another aspect of the present invention includes host cells that have been engineered to contain and/or express DNA sequences encoding the NHL protein. An expression vector containing DNA encoding a NHL-like protein may be used for expression of NHL in a recombinant host cell. Such recombinant host cells can be cultured under suitable conditions to produce NHL or a biologically equivalent form. Expression vectors may include, but are not limited to, cloning vectors, modified cloning vectors, specifically designed plasmids or viruses. Commercially available mammalian expression vectors which may be suitable for recombinant NHL expression, include but are not limited to, pcDNA3.neo (Invitrogen), pcDNA3.1 (Invitrogen), pCI-neo (Promega), pLITMUS28, pLITMUS29, pLITMUS38 and pLITMUS39 (New England Biolabs), pcDNA1, pcDNA1amp (Invitrogen), pcDNA3 (Invitrogen), pMC1neo (Stratagene), pXT1 (Stratagene), pSG5 (Stratagene), EBO-pSV2-neo (ATCC 37593) pBPV-1(8-2) (ATCC 37110), pdBPV-MMTneo(342-12) (ATCC 37224), pRSVgpt (ATCC 37199), pRSVneo (ATCC 37198), pSV2-dhfr (ATCC 37146), pUCTag (ATCC 37460), and IZD35 (ATCC 37565). Also, a variety of bacterial expression vectors may be used to express recombinant NHL in bacterial cells. Commercially available bacterial expression vectors which may be suitable for recombinant NHL expression include, but are not limited to pCR2.1 (Invitrogen), pET11a (Novagen), lambda gt11 (Invitrogen), and pKK223-3 (Pharmacia). In addition, a variety of fungal cell expression vectors may be used to express recombinant NHL in fungal cells. Commercially available fungal cell expression vectors which may be suitable for

recombinant NHL expression include but are not limited to pYES2 (Invitrogen) and *Pichia* expression vector (Invitrogen). Also, a variety of insect cell expression vectors may be used to express recombinant protein in insect cells. Commercially available insect cell expression vectors which may be suitable for recombinant expression of NHL include but are not limited to pBlueBacIII and pBlueBacHis2 (Invitrogen), and pAcG2T (Pharmingen).

Recombinant host cells may be prokaryotic or eukaryotic, including but not limited to, bacteria such as *E. coli*, fungal cells such as yeast, mammalian cells including, but not limited to, cell lines of bovine, porcine, monkey and rodent origin; and insect cells including but not limited to *Drosophila* and silkworm derived cell lines. For instance, one insect expression system utilizes *Spodoptera frugiperda* (Sf21) insect cells (Invitrogen) in tandem with a baculovirus expression vector (pAcG2T, Pharmingen). Also, mammalian species which may be suitable and which are commercially available, include but are not limited to, L cells L-M(TK<sup>-</sup>) (ATCC CCL 1.3), L cells L-M (ATCC CCL 1.2), Saos-2 (ATCC HTB-85), 293 (ATCC CRL 1573), Raji (ATCC CCL 86), CV-1 (ATCC CCL 70), COS-1 (ATCC CRL 1650), COS-7 (ATCC CRL 1651), CHO-K1 (ATCC CCL 61), 3T3 (ATCC CCL 92), NIH/3T3 (ATCC CRL 1658), HeLa (ATCC CCL 2), C1271 (ATCC CRL 1616), BS-C-1 (ATCC CCL 26), MRC-5 (ATCC CCL 171) and CPAE (ATCC CCL 209).

As disclosed in Example section 1, a 115 kb BAC clone (from Genome Systems) was subcloned and subjected to restriction and sequence analysis. Four genes at chromosome location 20q13.3 were identified, including M68/DcR3, NHL, SCLIP and ARP (Figure 5A). The nucleotide sequence of this BAC clone, hbm168, is presented as follows:

25	TGAAGAGCTT TGACCAAGAG GCTGTGACGA GGCCCTACGA GGACTCTGGC TCTCCTCCTG	60
	CTAAGCACAC CCAGGCAGGT GTCCTGGCAG ATGAGGACCA CATGCAGAGC CTCGGCCAGC	120
	CCACCAATGC CCGGATATGC AAGTGAGCCC AGCCTGGACC CCCC GGCGAG GCCCAGCAGC	180
	ACCAGCCCAG GCCCGAAAAC CTTAAGAAAT GACCAGTGTC TGCTGCTTTA AGCCACCAAG	240
	CTCTGCGGTG GTTTGTTAGG CTGCAAGCAT GGCTAATTCA GAAACTGCCA GAAACAAGCA	300
30	CTGCTGTCCC CAGCCTGGGA CACACAGCAC CGCCTCTGCG TGGGGAGAGG GCACAGGCTA	360
	AGGGCACAAA TGCCATCCCA GACCCGGCTC TTGTGTGTGG AAGGGGCCAC TGTGCCATGA	420
	GGCAGAGGAA ACCTTGGCAG GACCTTATGC CACAGCAATT TAAAAGAGAA GAAACAGGCT	480
	GGGCGTGGTG GCTCATGCCT ATAATCCAG CACTTTGGGA GGCCAAGGTG GTGGATCACT	540
	TGAGGTCAGG AGTTCAAGAC CAGCCTGGCC AATATGGTGA AACCTGTCT CTACGAAAAA	600

	TACAAAATTT	AGGCAGGCGT	GGTGGCGGGT	GCCTGTAATC	CCTGCTATTC	AGGAGGCTGA	660
	GGCAAGAGAT	TTACTTGAAC	CCAGGAGGTG	GAGGCTGCTG	CAGTGAGCTG	AGATCATGCC	720
	ACTGCACTCC	AGCCTGTGTG	ACGGAGTGAG	ACTTGGTCTC	AAAAAAAAAA	AAGGAAACAC	780
	ATCTGACTAG	TGTGATCTCG	CAAGGAACAT	TCCAGACACA	GTGGAGCTAG	AAGGTTCTTC	840
5	TCCAAACAAG	GAATCCCCAG	GGGATCAAAT	TGTTTTGCAT	CGGCCAGACA	TGGTGGCTCA	900
	AGCCTGTAAC	CCCAGTGCTT	CGGGAGGCTG	AGGTGGGAGG	ACTGCTTGAG	TCCAGGAGTT	960
	CAAGACTAGC	TTGGGCAACA	CAGTGAGAGC	CCATTAGCCA	GGCGTGGTGG	CACATGCCTG	1020
	CAGTCCCAGC	ACTGTACTAA	AAATCTACAC	GGGGCCGGGC	ATGGTGGCAC	ATGCCTGTAG	1080
	AGTCCCAGCT	ACTCAGGAGG	CTGAGGCAGG	ACGATTCCCT	GAACCCAGGA	GGTCACGGCT	1140
10	GCCATGAGCC	GTGACTGTGC	CACTGCACTC	CAGTCTGTGC	AACAGAACGA	GACTCTGTTT	1200
	CGAAAAACAA	AAAATCATTT	CATGTCTCCA	GTTTCTCCAC	TGGCAAAAGA	CTCTGTCAAG	1260
	GTAAAAATG	GTTCTGACCC	ACAGAAATCT	AAGAAAGGAA	AAAATATAAA	AAATAGAAAA	1320
	TTTAAAAAAG	AGATGGTCTC	AGAATAAAGA	CCAACCTGGG	CTATGGTTGT	CACTCTTCCC	1380
	TCACACCTTA	GAAAGCTTTC	TGGCCGCATC	TGGCCAAAGG	GCCACCCTGC	CCCATCTTGG	1440
15	ATCAGTGAGG	TGCCTTCGAA	CAAGCCACCT	GCCCTGGAGC	CCGTCTCTGC	TTGTCTGCCA	1500
	CCGCACGCTC	AGTAGGGGAG	GGGAAGTCGC	TAGGTTTTAG	TTCACCAGTC	TCTGGATCAA	1560
	GACGTGCCAT	AACCAAGAAG	CCCCAGCCAC	ACCCAGACCC	GATGTGGCCA	CAAGGGGTGA	1620
	GCTGGGAAGG	CCCAGGAAAA	GGCGGGAGGC	GGACGAATGG	AAATGTCATT	CTGTGGCCAC	1680
	AGAAATGATC	TCAACGTTTT	GTAACCTCCT	ACCAAGAGGC	AGTCTTAGCT	CTGCCCTTGA	1740
20	ACCAGCACTT	GGTGATGTCG	CTTGCGTCAA	TCAAGGCAAC	AGAAGTGAGC	AGGAGGCCCA	1800
	CTTTCCTCTG	CAACTGTGGG	CTTACGGGGC	AAAGAAGTCC	AGGCCTCCAG	GTGGAGGATC	1860
	ACAGACCGGG	CAAAGCAGAG	GAGAGCCACC	CAGCCGAGCC	TACCTGTGCC	TCAGACTGCC	1920
	TCCCTCCAGA	GACCCCTGTG	GCCAAGGCCA	CCCAGACCAG	CAGGTCCTTG	CCAAGCTGTC	1980
	AGCTGACGAC	AGGGGTTGGT	GAGGCCGGCC	CAGACCAGCA	GAACCACGAA	CCAACCAACA	2040
25	GAATTAAAAA	TAATAACAAC	TATGTCTTGT	CTTAAGCCAC	TAAGTTTTGG	ATGGTTTCTT	2100
	TCTTTCTTTT	TCTTTTTTTT	TTTCGGAGAC	GCAGTCTCAC	TCTGTTGCCC	AGGCTGGAGT	2160
	GCAGTGGCGC	AATCTTGGCT	CACTGCAAGC	TCTGCCCCCC	GGATTACAGC	CATTCCCCTG	2220
	CCTCAGCCTC	CTGAGTAACT	GGGACTACAG	GTGCCTGCCA	TTGGGTGTTT	TCTTAAACAG	2280
	CAAAAGAAAA	CTGACACAAT	CATAAACAGA	GCAAGCAAGA	GAACCTGGCA	ATTATTTCCT	2340
30	CTCTACTTCT	CACTGTTCTT	CAAAGAGTTA	ACTCAAGCAT	AAGATGTGAG	CAAATTCTTT	2400
	TAACATCCTA	GAAAAAAGC	TCCTACTCAG	TGTTCATAAA	GCAAAGCTAA	CCTACAGGAG	2460
	CCACCTTCCA	CAGTGACCAC	AGGAAACCAA	GACAGCAAGT	GGGACACCAG	CCTCCAGGGC	2520
	ACTGCGCCAG	CCGTGCGCCT	GTGTCTGCCA	CTGCCCTGGT	CCGTCACTGC	CACCAGCCGG	2580
	CAAGACACCC	ACAGAGGAGA	GCTCTAAGCC	ACAACGTGTG	ACGAAGACAA	CTGTGCAGGA	2640

	TTTTATTACT	ACAACATTTT	TGTTTTCTTT	TTTTTTTTTT	TTGAGACTG	AGTCTCGCTC	2700
	TGTCACCCAG	GCTGGAGTGC	AGTGGCACAA	TCTCGGCTCA	CTGTAACCTC	CATCTCCCTG	2760
	GTTCAAGCAA	TTCTCCTGCT	GCAGCCTCCC	AACTGGATTA	CAGGCGCCCG	CCACCACGCC	2820
	TGGCTAATTT	TTGTACTTTT	AGTAGAGATG	GGGTTTCACC	ATGTTGGCCA	GA CTGGTCTC	2880
5	AAATTCCTGA	CAAGTGATCC	ACCCACCCTG	GCCTCCCAAA	GTGCTGGGAT	TACAGGTGTG	2940
	AGCCACTGCG	CCTGGCCCAT	TTTTGTTTAT	CAATAAAAAT	GTACTTAATG	TTGAACTCTC	3000
	CACATTTCAA	ATGGGTA ACT	CCAGTGTCTT	TGATGCTCCT	GCGACATGTT	CGTGAGACTT	3060
	CTCTTGGGTG	TGAGAGTCTA	GCATGTGGGT	GGTCTGGACA	GGAGGGGGAG	GGAAGAGTGC	3120
	AGAGCCGGGC	AGGGTAAAGA	GACCCCTAG	GATGTGAAGG	CCGCCCTGCA	TTTGT CAGAC	3180
10	TGGGCAACAC	CCACTCCATC	AGATGGACCC	TGGTATGGGC	GGCAAGCCAC	CTAGGTGCCG	3240
	AGGCAAGAGA	CCGAGGGCAC	GAGCTGTTCC	GGTGAATAAA	AATGCATAAA	ATAAGAATAG	3300
	TTATACTAGA	TATAGATCAT	AAATATGATT	ATATATGAAT	ATCATTTCATC	ATTAGTTTGT	3360
	AGCAATTACT	CTTTATTCCA	ATATTATAAT	AATCCTTGCC	TAAGCATAAC	CTAGGAAAAA	3420
	CTAGGAAATC	ATAACCTAGG	AAAAACTAGG	CCATACAGAG	ATAGGAGCTG	AGGGGACATA	3480
15	GTGAGAACTG	ACCAGAAGAC	AAGAGTGCGA	GCCTTCTGTT	ATGCCTGGAC	AGGGCCACCA	3540
	GAGGGCTCCT	TGGTCTAGCG	GTAACGCCAG	CATCTGGGAA	GACGCCCGTT	GCCAAGTGGA	3600
	CCGTGGTCTA	GCGGTAGCCT	CAGTGTCAAG	GAAAAACACC	CGCTACTTAG	CAAACCAGGA	3660
	AAGAGAGTCT	CCCTTTCCCC	GGGGGAGTTT	AGAGAAGACT	CTACTCCTCC	ACCTCTTCCG	3720
	GAGGGCCTGA	CATCAGTCAG	GCCCCGCCGC	AGTTATCCGG	AGGCCTAACC	GTCTCCCTGT	3780
20	GATGCTGTGC	TTCAGTGGTC	ACGCTCCTAG	TCCGCCTTCA	TGTTCATCC	TGTGCACCTG	3840
	GCTCTGCCTT	CTAGATAGCA	GCAGCAAATT	AGTGAAAGTA	CTGAAAGTCT	CTGATAAGCA	3900
	GAAATAATGG	CGTAAGCGGT	CTCTCTCTCT	CTCTCCTCTC	TCTCTGCCTC	AGCTGCCAGG	3960
	AAGGGAAGGG	CCCCCTGGCC	AGTGGGCACG	TGACCCACAT	GACCTTACCT	ATCACTGGAC	4020
	ATGGTTTACA	CTCCTTACCC	TGCCGCTTTG	TCTTGTATCC	AATAAATAGC	GCAACCTGGC	4080
25	ATTCGGGGCC	GCTACCAGTC	TCCGCGTCTT	GGTGGTAGTG	GTCCCCCAGG	CCCAGCTGTC	4140
	TTTTTCTTTT	ATCTTTGTCT	TGTGTCTTTA	TTTCTACACT	CTCTCATCTC	CGCATACGAG	4200
	GAGAAAACCC	ACCAACCCTG	TGGGGCTGGT	CCCTACACCC	TGGCTTTGTA	GA CTGGAGCC	4260
	TAGGCACGAC	TCAGCTGCTG	TAGTGAATTG	CGATCCTCCA	AACCCAGCAA	GGCACCTGCA	4320
	GGACATCTGG	CCCAGTCTCC	TCGTTGAGCC	AGTTCACGAA	AAAGAGACTT	TTCTGAGTGA	4380
30	CATGCTAATG	GGCAATATGA	GGACTAAATG	GGATGGTCTC	CAACTTGGAC	AAACCAACAG	4440
	TAAAAGCCAC	TTTGCGGGGA	AAGAACTTT	TCCTTTTTTC	TTTTTTTTGA	GACAGGATCT	4500
	CACCCTGTCA	CCCAGGCTGC	AGTGCAGTGG	CATGACCTTG	GCTCACTGCA	GCCTCAACCT	4560
	CTCTCAGGCT	CAAGCAATCC	TCCCGCCTCA	ACCTCCCATG	CAGCTGGGAC	CATAGGTGCA	4620
	TGCCACCACA	CCCAAATAAT	TTTTATATTT	TTTGTAGAGA	CGAGGTTTCA	CTATGTTGCT	4680

	CGGGCTGGTC	TCAACTCCTG	GGCTCAAGCA	ACCCTCCCAC	CTCAGCCTCC	CAAAGTGCTC	4740
	AGATTACAGG	CAGGAGCCAC	CAGGCCTGGC	CAACATAGGA	AGAAATTTAA	ATTTGAATTG	4800
	AATATTAGAA	GAGATGAAAA	TTCATCAACA	TGGAAAGACA	AAGATCATT	ACTAAAGCCA	4860
	AACCAGAAATG	GAAGCTGTGT	GTACAGTGGG	GTCTCATGCT	GGGAACGCGA	GGGGCACGTG	4920
5	CAGGGCTCCA	CGGTGTGGCG	ACGCCCCATG	CTCCCTTTGT	GGGGGTTCAT	CCAGCGGAAC	4980
	ATGAGGACCT	GGGTGCTTT	TCAACATGTA	CGTGAGTTTA	ATAATAAAAA	GGTTTAAGGA	5040
	AAGAAAAATT	CATATGTTTC	TATATAAACA	GAACATCTGG	AAAGATCTAT	TCTAAGGTGT	5100
	TGACAGTAGG	AATCTCTAGG	TAGTAGTAAT	ATGGCCTTTT	TGAATTTTGT	CTTATCAGTA	5160
	TTTTCTAATT	TTCTTTTCT	TTCTAAATAA	TTCTAGCTAT	GAAATAATTT	TCTACCATAT	5220
10	ATATTTTGTA	ATAAAAATGG	TTATATTTAA	TTTTTTAAAG	GCTGTACAAA	CTTCCTGATA	5280
	AAATGGCAAA	TTAGACACAC	ACATGTGGGC	CGGGTACAGT	GGCTCGCGCC	TGTAATTCCA	5340
	GCACTTTGGG	AGGCTGAGGC	AGGCAGATCA	CCTAAGGTCA	GGAGTTTGAG	ACCAGCCTGG	5400
	CCAACATGGT	GAAACCCCGT	CTCTACTAAA	TATACAAAAA	TGAGCTGGAT	GTGGTGGCAC	5460
	ACACCTATAG	TGCCAGCTAC	TTGGGAAGCT	GAGGCAGGAA	AATTGCTTCA	ACCCGGGAGG	5520
15	CAGAGGTTGT	AGTGAGCCGA	GATCATGCCA	CTGCACTCCA	GCCTAGGCAA	CAAGAGCGAG	5580
	ACTCCAATC	AAAAAAAAT	AAAAATAACA	CACACGTGAA	TAGGCTCCTC	ATGGAAGTCA	5640
	TCACAACAAT	GCAGAGGGAA	GAGCTTCCAA	AGTGTAACC	CAGAAGCGAG	GAGCAGGAGG	5700
	GTGCGCGCAG	ACGCAGAGAG	CAGCAAGGTG	CAGACTGAGA	GGCGGAGGCT	GGCCGTGGGG	5760
	AGATGACTGA	TGCTCAGTTT	ATACCCCAA	TCCGTAAATC	TAGAGGCCTG	GCACATCAAC	5820
20	TACCTCTGCC	AGCAGGAATG	AGGGAAAGGA	GGGCAACCAA	AAGATGTCCC	ACCCTCACCC	5880
	ATCCAGCTAC	CTGCCATCCT	CAGCCCCACT	GGCAGAAGAC	CCTGAGAGGT	GGAGGCAGGC	5940
	CCCTGCCTAC	AGGACCCTGA	GAGCTAGGGG	AAGGCGTTAT	CCTGAACTGT	GTCCCCCGTA	6000
	AAATTCATAT	GTTGAAGGCC	TCATCCCCAG	TGTGACTGTA	TTTAAAGATG	GGGTCTTCAG	6060
	GAGATAATTT	AAATGAGGTC	ATATAAGTTG	CCCCTCATCC	AGTAAGACTT	TGACCTTCTG	6120
25	GTGGTTTTTT	TTTTTTTGGA	GA CTGGGTCT	CACTCTATCA	CTCAGGTTGG	AGTACAGTGG	6180
	CACGATCACG	GCTCACTGCT	GTCTCCAAT	CCTGGGCTCA	GGTGATCCTC	CTGCTTCAGC	6240
	CTCCTGAGTA	GCTGGGACTA	CAGGTGCTTA	CCACCGCACC	CAGCTGGTGG	TGCATTGTGT	6300
	TTTTTGTA	GATGGGGTTT	TGCCATGTCG	CCCAGGCTGG	TCCTGAACTG	GGCTCAAGTG	6360
	ATCTGTCTCC	CTCGGCCTCC	TGCAGTGCTG	GAATTACAGG	TATGAGCCAC	CGCGCCTGGC	6420
30	CGACCGTGAC	CTTCTAAGAA	GTGAAAGAGA	AAGATCTTTC	TCTCTCCCTC	CCTCTCCATC	6480
	ATGAGGACAC	AGCAAGAAGT	CGGCCATCTG	CAAGGTAGAA	AGCGAGTCCT	CCCAACAGCT	6540
	GAACCTGGCA	GACCCTGATC	TTGGACTTCA	GCCTTCAGAG	CTGTAAGAAA	ATAACTCTCT	6600
	GCTGTTTCAGG	CCACGCGGTC	TACGGCAGCC	CGAGCAGACT	AAGACACACG	CCATCTGGGG	6660
	AGTCAGACCA	GATCAGGAAG	AAAGGCCTAG	AGCTCAGGAT	ACTGAAGGTC	CCAACCCGGT	6720

	GCTGGACCAG	ACCACCCCGG	CAGCCGCGGC	CACGGAGTCA	CGGCTCGGGT	GAGGTGACCT	6780
	GGACACCATC	CCGGCAGCCG	CGGCCACGGA	GTCACGGCTC	GGGTGAGGTG	ACCTGGACAC	6840
	CATCCCGGCA	GCCGCGGCCA	CGGTGTCACG	GCTCGGATGA	GATGACTCGG	ACACCACCCC	6900
	GGCAGCCGCG	GCCACGGTGT	CAGGGCTCAG	GTGAGGAGAG	TTGGATATGG	GA CTGGGCTT	6960
5	ACCCCGAGGC	TGCTTCCACC	CAGACGCCTG	GGTGGGTGAC	ACGAAAGCTG	GGCTCAGTTG	7020
	GGATCAGAGC	AGCCTCTCCC	CAGGTCAGAA	ATGACCCTGG	GCTCCTCACA	GTAGCCCTAG	7080
	GGCACCATGA	GAAAGCTACG	TGGACTTCTC	TGACCAAGGG	TCACTGCTGC	CACACTACTC	7140
	ATTGCAGGCC	ATGTCAGGGC	TCAGCTGAGG	AGACGTGGAC	ACCACCCAG	CAGCCGCGGC	7200
	CACGGCGTCC	CAAGGGAGGG	ACTTGGGCAC	TGCCTCTCTG	GGCAAGAGTG	GGGAGGTGTG	7260
10	GGGTGGGAGA	TGTCTGGAAA	CATCATGGAC	ACATGCCGGG	AAAACACGGA	AGCTGTGCAC	7320
	CAAGGTGCTG	ACAAAGGAAA	AAGGAGAATG	GAGGTGTGAA	CATCCAGCTA	GCAGGTCCCA	7380
	CTCAGAAACT	CCTGCATTTC	CAGACATGGC	CACCAGCTCT	GTGGATGAGA	CAGGGGAGGA	7440
	CAGGGTACCT	CACACCAGGA	ACCCACACAG	GTCCATGTCT	TGCTCTGTGA	TCACACAACA	7500
	GCCTCCACCA	CCCTGACATG	CAGGAGGGAG	GTCAAAGCCT	CGGGTCCAAC	AACAGGCTCC	7560
15	ACAGCAAGGG	AAGAAAGGCA	GGAAGGAACT	CAGGGCCAGG	TCCTCCCAGG	CAGCAGCTGC	7620
	CTGCACGCTG	TCCACCAAGG	GAGGTCTGAC	CTACACCGCA	CAGGGGTTGG	CAGTCTAGAG	7680
	TCGTCCTCTG	TCAAACGGTG	AGAAAGTCAA	AAGCTCATGC	TCAGTGATAT	GCTAGGTCAG	7740
	CATGAAGATG	CCACACATGA	GACACAGCAA	GGATGAGACC	AACGGGAAGA	CTGCCCCAGA	7800
	CCAGAGCCCC	AGAGCCCTCT	GGGGAGGAAG	AATAAGGATG	GCAGCCTGGG	ACTGCCCCGG	7860
20	GCTGACTCTG	CCTTTATTTC	ACCCCAGCAG	AGGCAGGAGT	GACACCGGCT	CACAGCAGGA	7920
	GCAGCTCTGC	CACCTCCTAG	CAGTTCACCC	TACGGGCAGC	AAAACAAAGC	TGGCAGTTTG	7980
	GGCAAATGTT	AGCGTTTTTG	CCAACTAACA	TTTGAATCGG	ACATCTGGTA	CAGAGATGAG	8040
	GAAGAAAACA	CTCACAGTTT	CATGAAGACT	GTCAAGAAAA	TCACTGACTC	TTCATTTCAT	8100
	TTATGAAAGG	CCAGCTCTCT	GACATCCCTA	CCACTCCCTC	TCACATGAGA	AATCAGGCC	8160
25	TTTCAGGACG	TGGAGCCACG	TGGCCATGCA	GGTACGGGAG	GCCTCCCCGC	AGCTGCAGCT	8220
	GGGTCTTCTG	GTCCCCGTGC	CATTTCTGCT	TTTCTTCGCT	CTCTACTTAC	ACACACATTT	8280
	GAGTCCAGTC	TCAGAAGAAC	TGGAAGTAGA	AAAATCCTGA	CAC TTGTCCC	TTACTACGTT	8340
	AATGCCAGCT	GTGCCAAGGA	CAGCCCAACC	CAAGCCCCCA	TCAGCCCCAA	TGGCACCAGG	8400
	GCCCCAGCTT	ACCCGTGAGG	GGCCAAGTTG	GTGTCACCA	ACACGGTCTT	CACCCCTCC	8460
30	ACACCACTGC	CGTCCACTGC	AGTGTCCGGA	GTTGTACAAA	CCACCACCTC	CTCCATGTGC	8520
	ACACTCACGT	CGGGAGTCGC	CATGGCTCAG	CGGAAGGGGA	CGCCCAGGCC	AGCAGCGTCA	8580
	GTCCTCCAGG	GTCCCAAGTC	CTGGAGGAAG	CAAGGCAGGG	CACAGGGATG	GAGTCATCTC	8640
	CACATCCACA	CAACATAGCA	CTCACAAAGG	CATCTCTAAT	CAGCTCCAAA	GACCCACCTT	8700
	TGAGTCCCAG	ACTGCTACCT	CCTGACAAAA	ACGAGCGGCA	ACAGAAGGGC	TACTCCAGGC	8760

	TCTGGTTCCG	AGGGCGGTGT	AAGCGCACTC	CACCCGTTTT	TCCCACTGGA	TAAGCCGAAA	8820
	CCCTTGGGTA	GAAAGCACAG	AGCCACTCCC	TCCACGTGGG	GCTCAGAGCA	GGAGGACAGG	8880
	AGGGGCCTGG	AATTCCAAGC	AACTTCCCTG	GACGCAGGCT	CCCGGCTTGC	CAGTTCTTCC	8940
	GTCTCTCCTG	GCCTGAACTC	AAAGCCAGCC	CCAATCCCTG	AACTGAGTTT	CAGGTGCAGA	9000
5	AAGCACTCCA	AGAAGTCCTC	GCTGGTCTGT	GGAACGGGAA	GGGAAACCCA	TTCAAGACAG	9060
	AAAGAGAGGA	GGGAAACGCC	CTGGGTTTTT	TTGGGTTTTT	GGGTTTTTTT	TGAGACGGAG	9120
	TCTCGCTCTG	TCGCCCAGGC	TGGAATGCAG	TGGCACGACC	TCGGCTCACT	GCAAGCTCCA	9180
	CCTCCTGGGT	TCAAGTGATT	CTCCTGCCTC	AGCCTCTCCA	ATTGCTGGGA	TTACAGGTTT	9240
	CACCATGTTG	CCCAGGCTGG	TCTCAAACCTC	CTGACCTCAG	GTGATCCACT	CACCTCGGCC	9300
10	TCCCAAAGTG	CTGGGATTGC	AGGTGTGAGG	CACCATGCCT	GGCCTGCCCC	GGGTTTAAAA	9360
	ATTATTATTA	TTTTGTCTTT	CCTGGCTTTG	CCTTCAGCAA	GTCCAACCCC	TGCTAAAACC	9420
	CGGTGATAAT	GGCTGTCTCG	GCCCCAAAAG	CTTGGAGACA	GGGGAATCTT	CCTCCTGACT	9480
	AAAGGAATGG	TGGCCCAAGA	GTGTGGGGGC	TCCCTGTTGC	CCTCTCACTC	TCCATCCCCCT	9540
	ACCTAGCACA	GGGAACACAA	AAGCCCCTGG	TTTCCAGCCA	GAGGGCAACG	AGCCTGGAGT	9600
15	CAGAGTGTGG	GGGAGGCGAC	AAGAGGAGAG	GGGAGAAGAG	AGGATGGCAC	ACAGCTGTGT	9660
	GTGAGCGCCT	GGGTCGTCCC	AAGACAGTCT	CTACGTGGTC	CTGACCCTAA	AGGGCAAAGG	9720
	GAAGAAAAC	GACCTACAGG	ATAGGCCACT	GCCCAGGTCT	CAGATGGGCC	CCAGTGGCGC	9780
	ATATGGGACA	GATCCACAGT	GCACTGGAAA	GTCTCTAAAA	TAAACTGGCC	TAAGAACACA	9840
	GACACAGGAA	CGGGGTGCAA	AATTTGCAGC	CTGAACCTAA	CCAGGTCGAT	TTCTTGCTAT	9900
20	GAAAAAATA	AGTCTACATT	CTCTGTGAAA	CTTAAACAA	GACCTAGAGT	CCATAGCACA	9960
	GTAGTCAAAG	CATCCAGAAC	ACGATCAAAC	TTCCTGGCAA	AGGGTAGTCT	GGTTGATTCT	10020
	CAAAGGAACA	AATACACAAG	AGAAGCTGGC	TCTTGAACGC	AGAATCCAGA	GACTTTCAGG	10080
	TGCTATCGGA	CCAGCTCCAA	GAGGAAAGCA	AACATTGTCA	ACCAAGTGGA	AAGAAAATCT	10140
	TGGTATAGAA	ACAGGAGTTA	TAACCAAACA	GAAATGTGAA	AATTAAAAAC	GACAACCAAA	10200
25	AGAAAATACA	CAAAGCTGGG	ATAGTCTCAG	CTACTCGGAA	GGCGGGGCTG	GAGGATCGTT	10260
	TGAGCCTAGG	AGATTGAGGC	TGCAATGAGC	TGTGATCACA	CCACCGCACT	CCAGTCTGGG	10320
	CAACAGAGTG	AGAACTCTCT	CAAAAAACGA	AAAAGAAAGA	AAGTAGAACA	GAAGTGACCA	10380
	GGGGCTGGGG	GAGGGAGTAC	AGGGAGTTGT	TCTTTAATGA	GTACAGAATT	TCTGTTTGGG	10440
	ATGATGAAAA	GCTCTGGAAA	TGGACGGCGG	TGATGGCTGC	ACAATCACTG	TGGCTGTTCT	10500
30	GAATGGTGCT	GAACCACACA	TTTAAAAACA	GTAAAAATGG	GCTGGGCGTG	GTGGCTCACG	10560
	CCTGTAATCC	CAGCACTTTG	GGAGGCGGAT	CGCCTGAGGT	CAGGAGTTCT	AGACCATCCT	10620
	GGCCAACACA	GTGAAATCCT	GTCTTGACTA	AAAATACTAA	AAATTAGCCA	GGCATGGTGG	10680
	CAGGCACCTG	TAGTCCCAGC	TACTTGGGAG	GCTGGGGCAG	GAGACCTGCT	TGAACCCAGG	10740
	AGGCAGAGGT	TGCAGTGAGC	CGAGATCGTG	CCACTGCACT	CCAGCCTGGG	CAACAAGAGC	10800

	GAAACTCCAT	CTCAAAAAA	AAAAAAAAA	AAAAAAAAA	AAGTTTAAA	TGGTTAAATT	10860
	TTATGTTATG	TATATTTTAC	CGTAATAAAA	ACACTGTAAT	GCTACTATAA	TAGAATGACT	10920
	CATTAGGATT	AGATATAGAC	TAGAAAGTAC	AGAATATAAA	AACTTTTTAA	ACAAAGAAAA	10980
	ATTTTCATGG	CCAGGCATGG	TGTCACACCT	GTAATCCCAG	GACTTTGGGA	GGCCAAGGCA	11040
5	AGAGGAATGC	TTGAGCTCAG	GGGTTTGAGA	CCAGCCTGGG	CAACACAGCA	ACACCCCATC	11100
	TCTGCTAAAT	AAATAATAAA	AAATAGCCAG	GCATGGTGGT	GTGCACGCCT	GTAGTTGCAG	11160
	CTACTCTGGA	GGCTGAGGCA	GGAGGATCAC	TTAAGCCCAG	GAGGTCAAGG	CTGCAGTGAG	11220
	CCATGGTTGT	GCCACTGCGC	TCCAGCCTGG	GCAACAGATC	AAGACCTTGT	CACAAAAAAA	11280
	AGAAAGAAAG	AAAAGAAAA	AGAAAGAAAA	TAAAATCTTC	CAGAACTTTT	AAAATCATCA	11340
10	TTGTTAATAT	AAAAATAACA	TCACCTGCCC	CTAGGACTGT	AACAAACAAG	TGTGCTCTAAG	11400
	GACAGGAGTG	GGTCCACCCC	AACCTGGCAC	GCAGTGGTCC	CCTGCGGAGA	GTCTGGCCCT	11460
	GCCTCACTA	AGAGGAGGCA	CTCATAGCCC	AGCCAGGCCT	CTGCAATTAT	GCCTTCAATG	11520
	CCAGAATAA	CTCACCCAAA	CTGAACAATC	GATCACAAAA	TGTGCCTTCA	GGTCTCAAGG	11580
	TTCTTGCTAA	ATCTTACTCA	ACCGACATTT	TCCAGCATGG	GAACATTTTT	CTGAATGTCT	11640
15	TAGGGAGAGG	AAGTCCGCAA	GAGAACAAAA	GGTCCTCAGG	CCACCCTAGC	TTCTTTTCCT	11700
	CCATTCCACA	GGCTGTCTTT	TGTCTGGGTA	TGCACTGGAC	CAGGGGGCTC	TACTTCTTCC	11760
	TACCTGGGCA	TGGGTCTCCA	CACAACTCCA	AGGTAAAGGG	CCACAGGCAA	GATAAAGGGG	11820
	AGAAAAGAAA	GCTACGATTT	CCTGGGCCAC	CAATCGCAAA	TGGCAGCCAG	TCTCTGAAGT	11880
	AACCCTTGAC	CAGAGATCCA	AGGAACCAAG	AAATGTAGGT	GATCTGAACA	GAGGGGATGG	11940
20	TGGTTAAACA	CCATGAAGGA	AAGACCCATT	CTCAAAGAAA	AGGAAGCAAA	AAGAAACCGT	12000
	GGGGAGCTGG	GTACCACCCG	CAGCAAAGAC	CCCGCACGCG	TTACTGACGC	CAGCCTGGCC	12060
	TGGGAGAGCA	GTGAGTGTGG	CGGACGGTGA	GTGGCGGGGA	GGGCTGTGGT	AGGTTTAGGG	12120
	TAAGAAGGGG	CAGCGCCCAG	AGCCCAGAGA	ACACCAGTGA	GGGCTCCACA	GGAACACTAC	12180
	TCAAAGTATT	CACGGAACAC	ATCTAAACAC	AAGCACTAAG	GACTAAGTGC	GAGGGACAAG	12240
25	AAAATATTCC	CCGTTTCCTG	TTTCAGGAGG	GTATCGAAAA	TGAGTGATGG	AAGGAAAATG	12300
	TATTGTTTAA	ATGAGGAAAA	AAAATTTTAA	CAAATTAAGA	ACATCCTGGA	ACATGATGAG	12360
	CCGTTTACTG	TCACTCAATT	TAAATGGTGG	CCATCTAGGA	CAGAGCGCCT	AAGGGGAAAG	12420
	GGGGCTCACA	GGTGAACCCC	TCCAGCTGCT	GGTGGGCAAT	TTCCCATTAG	GGCATCAGGG	12480
	TCTCTGAAGA	CTGTCTTCAG	ATGCTTTTAA	GCCAGGAAAG	TTACAATGAT	GAATTCGTTT	12540
30	ACACTGGCGG	AATTACTTCG	TATTTCTCAA	ATATAATGTT	TTCCTAGCA	TAACCTTGTT	12600
	GTTGTAGACT	TAGGCTTCAA	AATAAAGAAC	TTTAAACAAA	CATGAATAAA	AAGCCACTTT	12660
	AGGCCGGGCG	CGGTGGCTCA	CACTTGTAAT	CCCAGCACTT	TGGGAGGCCG	CGGCGGGTGG	12720
	ATCATAAGGT	CAGAAGTTCA	AAGACCAGCC	TGATCAATAC	GGTGAAACCC	CGTCTCTACT	12780
	AAAAATACAA	AAATTAGCCG	GGCGCGGTGG	CAGGTGCCTG	TAATCTCAGC	TACTTGGGAG	12840



	GCTGAGGCAG	GAGAATCGCT	TGAACCTGGG	CAGCAGAGGT	TGCAGTGAGC	CAAGATCATG	12900
	CCACTGCACT	CAAGCCTGGG	TGACAGAGTG	AGACTCTCTC	TTAAAAAAA	AAAGCCACTT	12960
	TAAATTTTA	CTCAGGCCAG	GTGTGGTGGC	TCACGCCCAT	AATCCTAGCA	CTTTGGGAGG	13020
	CCGAGGCGAG	CAGATCACCT	GAGGTCAGGA	GTTAGACCAG	CCTGGCCAAC	ATGGTAAAAC	13080
5	CTTGTCTCTA	CTGAAAACAC	AAAAATTAGC	TGGCGTGGT	GGTGTGCCCC	TGTAATCCCA	13140
	GCTACTCAGG	AGGCTGAAGT	GAGAGAACTG	CTTGAACCCG	GGAGGCAGAG	GCTGCAGTGT	13200
	GCCAAGACTG	CACCACTACA	CTTCAGCCTG	GGCGACAGAG	CAAGACCCTG	TCTCAGAAAA	13260
	AAAAAAATT	CAAAAATTTG	GCCAGGCGTG	GTGGCTCACG	CCTGTAATCC	CATCACTTTG	13320
	GAAGGCCGAG	GCGGTGGAT	CACCTGAGGT	CAGGAATTCA	AGACCAGCCT	GGCCACCATG	13380
10	ATGAAACCCCT	GTCTCTACTA	AAAATACAAA	AAAAAAAAA	CAAATTGGCC	GGGCATGGTG	13440
	GCGGTGCCT	GTAATCCAC	CTACTTGGGA	GGCTGAGGCA	GGAGAATCTC	TCGAACTCCG	13500
	GAGGCAGAGG	TTGCAGCGAG	CCAAGATTGT	GCCACTGCAC	TCCAGCCTAG	ACAACAGAGC	13560
	GAGACTCTGT	CTCAAAAAA	AAAAAATTAA	AATTAAAAA	TAAAAATTTT	ATTTAAAAATA	13620
	CTACTGATCT	CCCGTGCTGA	CTTCTCGGGG	TTTAACTCTC	ACTGAGGAGA	CGCTGCTTTC	13680
15	ATAAGGGTAA	GCTCAGCAGG	GGCAACTAAA	GTCATTTAAG	CAGAGAGCTG	CAAAGAGGCA	13740
	ACAGCCTCAC	TGCAGGCAGG	GGTCTCGTC	ACAGCTTCAG	GGCTTTGCAG	AGGATTACGC	13800
	AATGTACACG	CACAAAACCTG	AATTCCAGCC	TCTCCATTGG	CAACTGCATA	CATACATATA	13860
	TTCTTTTTTT	GAGACGGAGT	CTCGCTCTGT	AGCCCAGGTT	GGACTGCAGT	GGCCCCGATCT	13920
	CGGCTCAATG	CAAGCTCTGC	CTCCCGGGTT	CAAGCGATTG	TCTTGCCCTCA	GCCTCCTGAG	13980
20	TAGCTGGGAT	TACAGGCGCC	CACCACCACG	CCCGGCTAAT	TTTTGTATTT	TTAGTAGAGA	14040
	CGGGGTTTCA	CCATGTTGGC	CAGGACAGTC	TCGATCTCCT	GACCTCGTGA	TCCGCCCGCC	14100
	TCTGCCTCCC	AAAGTGCTGG	GATTACAGGC	GTGAGCCACT	GAGCCTGGCC	TCCAATGGCA	14160
	ACTATATTAA	AGGTTCAAAG	CAATATGCAC	AAAAGTTACC	TCACAGAAAA	TAGTGCAAGT	14220
	CCTTGATACA	ATGCTCTTTA	GACACAGAAG	AAGCACTATA	GAATAGAGCA	CCTCGCCCTA	14280
25	TTGCCTTCCC	AAGGGCGAGC	ACCCCTCCT	CTCTCCACAG	CTCCTTCTTT	GTTTTTTTGA	14340
	GATGGAGTCT	CGCTCTGTCA	CCCAGGCTGG	AGTGCAATGG	CAAAATCTTG	GCTCACTGCA	14400
	ACCTCCGCCT	CCCGGGTTGA	AGTGATTCTC	CTGCCTCAGC	CTCCCGAGTA	GCTGGGACTA	14460
	CAGGCACCCA	ACACGCCCTAG	CTAATTTTTG	CATTTTTTGGT	AGAGACGGGG	TTTCATCATG	14520
	TTGGCCAGGC	TGGTCTCGAA	CTCCTGACCT	CCAGTGATCC	TCCCACCTTG	ACCTCCCATA	14580
30	GTGCTGGGAT	TATAGGTGTG	AGCCACTACA	CCTGGCCTCT	CCACAGCCCC	TTCTGTGTTG	14640
	AAGCCAAGAC	CCACCCAGCT	TTGATCCCAA	GGCTTGGGTT	CCCCACTAGT	GTGAAGTGAG	14700
	TTTCCAAATT	ATTAGGTAAA	TCAGATATGA	GAAAATATTT	TATTTTACTT	TTTTTTTTTT	14760
	GAGACGCAAT	CTTGCTCCGT	CACCCAGGCT	GGAGTGCAAT	GGCACCATCT	CCACTCACTG	14820
	CAACCTCTGC	CTTCTGGGTT	CAAGCAATTC	TCCTGCCTCA	GCCTCCCAAC	TAGCTGGGAT	14880

	TACAAGTGCA CACCACCACG CCCGGCTAAC TTTGTATTT TTAGTAGAGA CAGGGTTTCA	14940
	CCGTGTTAGC CAGGCTGCTC TCAAACCTCCT GACCTCATGA TCCGCCCACG TCGGGCTCCC	15000
	AAAGTGGTGG GATTACAGGT GTGAGCCATC ACACCTGGCC CAAGAAAATA TTTTAAACT	15060
	AGTATTCTTG ACCGGCACGG TCAACACTGA TGTAATTGAA ACTGTTGTAT TTGAAGTGTT	15120
5	AGCAAAGAAA GAGAATTCTG GTTCAACAGA AAAGTCAGTC ACGACTTTTC AGTCACGCAT	15180
	GAATTACACA GTAACCAAAT AGATAACATG CCATGACTGA CGACGGGCCC ACAACAAATC	15240
	AGCTCCGACC AACAGGGTCC ACACCACCAT GGGTCTACAC AGATCCAGGT CCCGCCTGTG	15300
	AGCCTACAGT GACGCGGGCC CCTGTGGGGT GGTCCCTGCA GGTCAGGTCC CTGAGAGTGG	15360
	GTCCCAGTGG GGTGATCCCT GCGGGTCGCG TCCCTGCGAG TTGGGTGCCT GCCGGGTGGC	15420
10	CCCTGCGGGT CGGGTGCCTG CGGGGTGGTC CCTATGGGTG GCGTCCCTGC GGGTCGGGTG	15480
	CCTGCGGGGT GGCCCTGGG AATCGCGTCC CTGCGGGTCG GGTGCCTGCG GGGTGGCCCC	15540
	TGGGGATCGC GTCCCTGCGG GTCGGGTGCC TGCGGGGTGG CCCCTGGGGA TCGCGTCCCT	15600
	GCGGGTCGGG TGCTGCGGG GTGGTCTTGT TGGGTGCGGT CCCTGTGGGG TGGTCCCTGT	15660
	GGGTGCGGTC CCTGTGGGGT GGCCCTGCG GGTGCGGTGG TGGCCCTGCG GGGTCGGGTG	15720
15	CCTGCGGGGT GTCCCTGTG GGTGCGGTCC CTGCGGGTCG GGTGCCTGCG GGGTGGTCCC	15780
	TGCGGGTCGC ACCCTGCGG CGTGGTCCCC CCGGGATGGG TCCACCGAGG AGGCCGCTGG	15840
	AGGCCGAGCC CGCGCCCGCC CGCGGCGCCA AGATGGAGGC AGGAAGCGCC GCCGCCCGCG	15900
	CCCCCACC CGCGCGCCG CCGCCTGACG CCGCCGTGCG GCCTGACGCC GCCGCCCGCG	15960
	CGGCCGCCCC TCCCCCGGCC CTCCCTCCC CCCGCCGTAA CGTCTGACG CTCCGAGGG	16020
20	ACCCCTGACT GGACGGCGGC GCGTGAGCGG AGCGAGAGGC CTCGCCGCGG GGGGGCCGCG	16080
	GGCTCGCCGG CGCCGCTTAC CTGGGGCCGC GCCGGGCCTG CTTAGGCACC CGGCGGGGCG	16140
	GGCGGCGTCG GGAGCTGCGG CGGCGGCGGG CGGCGGCGGC GGCCGCGGGC TTCGCTCCTT	16200
	GTGCGGGATT CGGCGGCGGC GCGGCGCGG GCGCGCGCTT CCTAGTGACG CAGGCGGCGG	16260
	GGCCGCGCAC GCACGGGGCT GGGAGGGCCG GACACTTATT TGGCGCTCGC GGAGGAGGAA	16320
25	GGCGGGGCGG TGAAATAAGG CCCGACGGG CCCGGGGCGC GTGCGCGGAC CGACACTGTC	16380
	AGCTCCTAAC GCCGAGGTT CCTCCTGGTC CCCGAGGCC CCGGTGCGGC GTTGCCTGCC	16440
	CCGCGCGGGG GGCCGGGCGG AGGGACGATG GTCAGTGGAC GGACGGCGCC AGGGAGCAGT	16500
	GCCACGCGC GGCAGGGCGG TACCTTCAGG CCTCCAGGTA CGGGCGCTCC TCGCCCGGAC	16560
	GCTGCTGTGT GTGAATGGC GCGAGGGGAC TCCCCTGCGG GGCGGACGCC TGAACACGAG	16620
30	GCTGTGGAGG AGGACGCTGT AGGGTGCGCG GACTCACGCG GAACATGCCA GAGGCTCAGC	16680
	CAGCCACGGC GCTCCAGCG TGAGGGCGA GGGGCATCCG GGAGCGGCCG GGAGGGCTCG	16740
	GTCACCCCTC AAGCTGTAC CCCAGTCCCA CAACCAGCAC CCCGATCCTA TCGCAGTCCC	16800
	ACAGCCGACA CCCCAGTCCC ACCCTGCCC AACAGCCGGC ACCCACCCTA ATCCCATAGC	16860
	TAACACCCCG GTCCACCGC GTGTCACGG CCGGCACCCC GATCCACCCC CAGTCCCGCA	16920

	GCTGGCACCC	CGATCCCACC	CCAGCCCAAC	AGCTGGCACC	CACCCCGATC	CCACCGCTGT	16980
	CCCACAGCCG	GCACCCCGAT	CCCACCCAG	TCCCGCAGCC	GGCACCCCGA	TCCCACAGCC	17040
	GGCACTCACC	CCGATCGCAT	AGCATAGCTG	ATACCCCGAT	CCCACCCAG	TCCCATAGCC	17100
	AGCACCCCGA	TCCCACCCCA	GTCCCATAGC	CAGCACCTCG	ATCCCATAGA	TGACACCCCG	17160
5	ATCACGCCCC	AGTCCTATAG	CCCGCACCCC	GATCCACCCC	GAGTCCCGCA	GCCGGCACCC	17220
	CATCCACCCC	ATGTCCCACA	GTCGGCACCC	CGATCCCCT	CGGATCCGGC	AGCCAGCTTG	17280
	GATCCTGTGG	CCCTCCTCCA	GCCCCCAGG	CTCATTTATA	TGTTTTATTG	GCAGAGGCTG	17340
	GGGCTGGCTC	TGTTGGCCTC	TGTGTGGGT	TTCTTCTCT	GCACCGCAGG	ACTGGCTCTC	17400
	CTGACCTCTC	CAGGTGTCT	CGAACACCT	TGTGCTTGCT	GTCACCCGCT	GCCTGTCTGC	17460
10	AGGATCCCGG	ATTCCGTATC	AGGGGACCGA	AATTAGTCGG	AAAATAGGAA	GCAGGTGCTC	17520
	GCTTGGATGG	AACCCTGACC	CTGTGCTCAC	ACTTGTAGGA	GGAGGGCTCT	GCAGGCCGCC	17580
	TCCCGGAACG	GGAGGTTCCT	AAGCCACTGC	ACTTCGGAGG	GGCTGTAATT	AGAGTTGCAC	17640
	ATTCATTCAG	TTCCAGTAA	AGTAGAACGT	GCTCCAGCCA	GTGAGGAAAA	GGTGTTTTAA	17700
	AAAATTAGAT	TGGCCGAGTG	CGGTGGCTCA	TGCCTTTTAC	CTCAACACTT	TGGGAGACAA	17760
15	AGGTGGGAGG	ATCACCTGTG	GCCAGGAGTT	CAAGACCAGC	CTGGGCAACA	GAGCCTGTCT	17820
	CTGGGGAAGA	ATAAAAAAAA	AAATTGAGCC	TTTGTCACTG	CTACTATTTT	ATTATCTGGT	17880
	AAATATGAGA	GGGTTCACGC	GGTCTATGTG	TGTCAATTAT	CTGAGTTTGC	CTATCGTCAC	17940
	GTTTTGGA	TAAATGTCAA	TAAAGTCGAA	GAGGAGTGCT	GAGGGGGGCC	TGGGGATGGG	18000
	AGGGTGGCTA	CATCATGCCT	GTGTGTTGCG	CAAGCCACCC	GAGGTGCGCC	TGGGGTGAGC	18060
20	CCTGGGGCCT	GTTCTGCCTC	CTTCACTCTG	GGGCTCCAAG	AGACAAACTG	GGCAACAAGA	18120
	GAGAAACTCC	ATCTAAAAAA	AAAGAAAAAT	CACCTCCAAG	ATAACTTAGC	TTTCTTCTGC	18180
	TGGCATAACA	AATTATCTCA	AACTTAGTCG	CTTAAAAATG	CAAATTTAGG	CTGAGTGCAG	18240
	AGGCTCACGC	CCATAATCCT	AGCACTTTGG	GAGGCCAAGG	CAGGATTGCT	TGAGGCCAGG	18300
	AGTTCGAGAC	CAACATGGCC	AGAACTGTCT	CTTTTAAAAA	AATGCAAATG	TGTCCGGCAC	18360
25	GGTGGCTCAC	GCCTATAATC	CCAGCACTTT	GTGAGGCCAA	GGCGGGCAGA	TCACGAGGTC	18420
	AGGAGATAGA	GACCATCCTG	GCTAACACTG	TGAAACCCCT	TCTCTACTAA	AAATACAAAA	18480
	AATTAGCCTG	GCCTGGTGGC	AGGCGCCTGT	AGTCCCAGCT	ACTCGGGAGG	CTGAGGCAGG	18540
	AGAATGGCGT	GAACCCAGGA	AGCGGAGCTT	GCAGTGAGCC	GAGATGGCGC	CACTGCACTC	18600
	CAGCCTAGGC	AACAGAGCAA	GACTCCGTCT	CAAAAAATAA	ATAAATAAAA	CTGCAAAATG	18660
30	ATTCTCTAAC	TGTTCTGTAG	GTCGGAAGTC	CAGCCCAGCC	TCACTCCGCC	AAAATCAGGG	18720
	TGTCTGCAGG	GCCGATTGCT	TTTGAGCTC	CAGGGGAGAA	GCTGTTCTGG	CCTTTCCAGT	18780
	TTCTGGAAGC	ACTTGAGCCC	CTTGCTCTGT	GGCCTATCCC	ACACCTGAAA	GCCAGCCAAA	18840
	GCCAGTTGAG	TCCTCACCTT	GTTGGCCCCG	ACACTGATCT	CCTGCCTCCC	TCATCTGCTG	18900
	TCAAGGCCCC	TTGTGATGAC	ATGGGGCCAC	CAGCTGGCCC	AGGGCACCTC	CTGTCAGAGT	18960

	CCGCCGACCA GTGACCTTCA TTCCATCTGT CGCTGTAATT CCCCTTTGCT TGGAACCAAC	19020
	GTTCACAGAT CCCAGGGGTT AGGATGTGAA TATCTTGGGC AGGGCTGTGG GGGGGCTATT	19080
	CTTCCTTCTA AAATATTTAT CATTTTTGTT TTGGGGATT TTTTGGTTTG GTTTTTTTTG	19140
	AGACAGAGTC TCGCTCTGTC GCCCAGGTTG GAGTGCAATG GTGCAATCTC AGCTCACTGC	19200
5	AACCTCTGCC TCCGGGCAGA CGTGAGCCAC TGCACCAGGC CTGTTTTTGT TTTTGT TTTGT	19260
	TTTGT TTTGT TTTTGAGATG GAGTCTCGGC CGGGCGCGGT GGCTCACGCC TGTAAATCCA	19320
	GCACTTTGGG AGGCCGAGGC GGGCGGATCA CGAGGTCAGG AGATCGAGAC CATCCTGGCT	19380
	AACACGGTGA AACCCCGTCT CTACTAAAAA TACAAAAAAT TAGCCGGGCG TGGTAGCGGG	19440
	CGCCTGTAGT CCCAGCTACT CGGGAGGCTG AGGCAGGAGA ATGGCGTGAA CCCGGGAGGC	19500
10	GGAGCTTGCA GTGAGCCGAG ATCGGCCAC TGCCTCCAG CCTGGGCGAC AGAGCGAGAC	19560
	TCCGTCTCAA AAAAAAAAAA AAAAAAAAAA AAAAAAGAG ATGGAGTCTC ACTTTGTAC	19620
	CCAGGCTGGA GTGTAGTGGC GGGATTATAG GTACGCGCCA TCATGCCCAG TTACTTTTTG	19680
	TATTTTGTAGT AGAGACAGGG TTTTACCATG TTGGTCAGAC TGGTCTCAA CTCCTGATCT	19740
	CAGGTAATCC ACCCGCCTCA GCCTCCCAA GTGCTGGGAT TACAGACGTG AGCCACCGTG	19800
15	TCTGGCCATA TTTATTAAT ACAAAGGGA AGATGATAAT TTTTTTTTTT GAGATGGAGT	19860
	CTCACTCTGT CACCCAGGCT GGAGTACAAT AGCGTGATCT TGGCTCACTG AAACCTCTGC	19920
	CTCCCAGGTT CAAGCGATTC TCCTGCCTCA GCCTCCCAAC TAGCTGGGAT TACAGGCGCA	19980
	CGCTACCAAG CCCAGCTAAT TTTTGTATTT TTAGTAGAAA CGGAGTTTCA CCATGTTGGT	20040
	GAGGCTGGTC TCGAACTCCT GACCTTGTTGA TCTGCCACC TCGGCCTCCC AAAGTGCTGG	20100
20	GATTATAGGC ATGAGCCACT GCAACCGGCT GAAAGATGGT AATTTTAAAG TAGAGAACT	20160
	GGGTGGCTG GGCATGGTGG CTTATGCCTG TAAGTCAGC ACTTTGGAAG TCCAAGCAA	20220
	GAGGATCGCT TGAGTCCAGG AGTTTGAGAC CAGCCTGGAC AATATAGCAA GACCCCATCT	20280
	CCGCAAAAGC TAAAAAGTTA GCCAGGTGTG GCGGCACATG CCTGTAGTCC CAGCTACTCA	20340
	GGAGGCTGAC GTGGGAGGAT CACTTGAGAC CAGGAGGTCA AGGCTGAAGT GAGCTGTTAT	20400
25	TGTGCCACTG CACTCAGCCT GGGCAACAGA GCGAGAGTCT GTCTCCAAAG GTAAAAAAG	20460
	GTCCAGGCAC AGTGGCTCAC ACCTGTAATC TCAGCACTTT GGGAGGCCGA GGCGGGCAGA	20520
	TTCGTTGAGG TCAGGAGTTC AAAACGAGCC TGGCTAAATG GTGAAACCCC GTCTCTACTA	20580
	AAAATACAAA AAAATTAGCC AGGCATGGTG ACGGGCGCCT GTAATCTCAG CTACTTGGGA	20640
	GACTGAGGCA GGAGAAATCAT GTAAACCCAG GAGGCTGAGG TTGCAGCGAG CCAAGATCAT	20700
30	GCCACTGCAC TTCAGCCTGG GCGACAGAGC AAGACTGTCT CAAAAACAAA CAAAAGAATC	20760
	TTGAGTCCTG AGTTCCTCTA AGGGAAATTC CAGGCACCTC GCCACCCCTG ACAGGCAAAG	20820
	GAACAATCTG ATGAGGAAGA AGATAGAAAC AGCTTAAACA ATAGTCTCCC GGCCGGGGGC	20880
	AGTGGCTCAC GCCTGTAATC TGAGCACTTT GGGAGGCCGA GGCGGGTGGA TCACAAGGTC	20940
	AAGAGATCAA GACCATCCTG GCTAACATGG TGAAACCCCG TCTCTACTAA AAATACAAAA	21000

	AATTAGCCGG	GCGTGGTGGT	GGGTGCCTGT	AGTCCCAGCT	ACTCGGGAGG	CTGAGGCAGG	21060
	AGAATGGCGT	GAACCCAGGA	GGCGGAGCTT	TCAGTGAGCT	GAGATCGCGC	CTCTGCACTC	21120
	CAGCCTGGGC	GACAGAGCCT	CGAGACTCCA	TCTCAAAAAA	AAAAAAAAT	TAGCTGGGTG	21180
	TGGTGGCTCA	CACCTGTAAT	CCCAGCTACG	TGGCAGGCTG	AGGCAGGAGA	ATCGCTTGAA	21240
5	CCTGGGAGGC	GGAGGTTGTA	GGGAGCTGAG	ATCGCACCAC	TGCACTCCAG	CCTGGGCAAC	21300
	AGAGCGAGAC	TCTGTCTCAA	AAAAAAAAAA	AAAAAACAAA	AAAACAATAG	TCTCCCAAGT	21360
	AAGTCAGAGT	CACAAGGTGT	TTTGATTCCC	TGTGGAAACT	AAAATATAAC	AGCTTAACAT	21420
	ATGTTCTTGA	GTTATTTTTC	AGAACTTGG	ACATCCACCA	GGTGGAAAAT	GCTGAGCTAG	21480
	GAACAGTGGC	TATAATTTCA	GCCTTTTGAG	AGGCCAAGGT	GGAAGGATCA	CTTGAGGCCA	21540
10	GGAGTTAGAG	ACCAGCCTGG	CCAACATGGT	GAAACCCCGT	CTCTAGTAAA	AATACAAATA	21600
	TTAGCTGGGC	ATGGTGGTGC	AACCTGAAAT	CCCAGCTACT	TGGGAGACCT	AGCTGGGAGG	21660
	ATCGCTTGAA	CCTGGTAGGA	GGAGTTTGCA	GTGAGCTGAA	ATTGTGCCAC	TGCACTCTAG	21720
	CCTGGGCAAC	AGAGTGAGAC	TCTGTCTCAA	AAAATAAATA	AATAAAAAGA	GAAAAAAGTG	21780
	TTGCCTGCAG	GCCGGGCACA	GTGGCTCACG	CCTGTAATCC	CAACACTTTG	GGAGGCCGAG	21840
15	ATGGGCAGAT	CACCTGAGGT	CAGGAGTGCA	AGAACAGCCT	GGCCAACATG	GTGAAACCCC	21900
	ATCTCTACTA	AAAATACAAA	AGTTAGCTGG	GTGTGTACAT	GTAGTCTCAG	CTACTTGGA	21960
	AGCTGAGGCA	GGAGAATCTC	TTCAACCGGG	GAGGTGGAGG	TTGCGATGAG	CTGAGATCAC	22020
	GCCACCACAC	TCCATCCAGC	CTGGGTGACA	GAGTGAGACT	CCATCTCAAA	GCAAAAAAAG	22080
	AAACATAGGT	GGGACCCTTG	GTGTGTCCTT	AGGGCATGAT	GGTTGAGGTA	TACTGTGGT	22140
20	CCTGTCTATG	AAAAGAAAAC	GAGCCGACTC	TGTGTCTACT	GGAGAAAGCA	CTGCATATAT	22200
	CAGCCACAGT	CAATACCTCG	CTTCTGCAGG	GACGGTGGCT	GCCAGAGTGG	GAGGCTTTGG	22260
	TAGCACCCAT	GTCGTGGAAT	CACAATGTTG	TCGATAGCTC	TGGGGTCTTG	TACAAAATGC	22320
	CAGATCCTCC	CATTGGTTT	CCTTATGGGA	AGGATCGCAG	TACTATAATA	CATGGGCTTG	22380
	TGCAAGGGAT	CAATATACCC	TTTTCTCTTT	TTTGTCTTTT	CTTTGAGACA	GAGTTTCACT	22440
25	CTCGTCACCC	AGGCTGGAGT	GCAATGGCGC	GATCTTGGCT	CACTGCAACC	TCCACCTCCT	22500
	GGGTTCAAGT	GATTTTCTCTG	GCTCAGCCTT	CTGAGTAGCT	GGGATTACAC	ATGCCCGCCA	22560
	CCAGGCCTGA	CTTATTTTTG	TATTTTTAGT	AGAGACAGGG	TTTCACCAAG	TTGGTCAGGC	22620
	TGGTCTTGAA	CTCCTGACCT	CAGGTGATCC	ACCCACCTCG	GCCTCCCAAA	GTGTTGGGAT	22680
	TTCAGGCATA	AGCCACCAGG	CCGAGCCTTT	CTTCTTTTTT	AAAATTAATC	TTGTTTTAAA	22740
30	AATACTCTCA	TTTTTTATTT	AATTGTAGCA	CTCCTAGATC	CCGAAAGCAG	ATACACTCTT	22800
	GTTATGGGTC	TGATTCCTTT	CATTGCTTCA	CGCCTTAGAG	GATATTGTCC	AATACTGGAT	22860
	AAAAGTTTAC	TCAGGTCTAC	TTCCACTTTA	ACGGGGATGG	CTGAATATCT	CTTCCACTTG	22920
	GCTGTTTGT	TATAATGAAC	TGACAAACAT	ACAAATTTTC	TTGAGTTCTG	TGAGACATTC	22980
	TAGTAAATCA	TCTAACCTGA	AGAGCAGGTT	GTGAGAACCC	CTGATTTAGA	AAGCCCAGTG	23040

GTCATAAATA TAAGTGGCTC TGGACTGGCT CCCGGGGTCT GAAGTGTGGG CAGTCGGTTA 23100  
 GGATTGAGCC CTTGTAATTT GTAGGATCTG ACACACACTC CAGGAAGGCA GTGTCAGAAT 23160  
 TTACCTGTAT TATATTGGAC ACCCAGTTAG CGTTTGGAGA ATTGGTTGCT GGTATAGAAA 23220  
 AATACCAAAT ATTTTATGTC AGGGGAGTGA AAGAAAAAAC AAAAACC CGGCGCGG 23280  
 5 TGGCTCACGC CTGTCATCCC AGCACTTTGG GAGGCCGAGA CGGGCGGATC ACGAGGTCAG 23340  
 GAGATCGAGA CCATCCTGGC TAACACGGTG AAACCCCATC TCTACTAAAA ATACAAAAAT 23400  
 TAGCCGGGCG TGGTGGCGCG CGCCTGTAGT CCCAGCTACT CGGGAGGCTG AGGCAGGAGA 23460  
 ATGGCGTGAA CCCGGGAGGC GGAGCTTGCA GTGAGCCCAG ATCGCGCCAC CGCACTCCAG 23520  
 CCTGGGCGAC AGAGCGAGAC TCCGTCTCAA AAAAAAAAAA CAAAAAAAAA AAACAAAAAA 23580  
 10 AAAAAACCCA TACACTTTAA GGAAAGCAAC TGACAGCATT TGTACCAGT GATAAAATTT 23640  
 GAGCTTTGAA GTAAGAATAA CAATTTTGCC ATTGTGCCCC GGCCAAGAAA AAAAAAGAA 23700  
 TTTTGCCATT GTGAAAGGCT TCCCAGTACT TTCTGATGAG CTTGACGGTG ATATTAACAA 23760  
 ATAACTTTTT TTTTTTTTTT TTGAGATGGG GTCTTGCTCT GTCACCCAGG CTGGAGTGCA 23820  
 GTGGTTCAAT CTCAGCTCAC TGCAACCTCC GCCTCCAGG TTCAAGCGAT TCTCCTGCCT 23880  
 15 CAACGTCCCA AGTCGCTGGA CTACAGGTGT GCGCCACCAC GTCCAGATAA TTTTGTATT 23940  
 TTTAGTAGAG ATGGGGTTTC ACCATGTTGC CCAGACTGGT CTCAAACCTG TGACCTCAGG 24000  
 CGACCCGCCC ACCTCGGCCT CCCAAAGGTG GGAGGCCTTG CTGGGATTAG AGGTATGAGC 24060  
 CGCTGCACCT GGCCTCTTGT CTTGTGTTTT TGCAGTGATG CAATGACCAT GTCTTACATT 24120  
 TGCAACCAGA AAAAAAGGTT AGTGTAAACA TGTATTATCCT GTTTTCCCA GAGTAGACAT 24180  
 20 TATGAAGATT AAAAAATTT GAAAGTGTG TGAATATAAT AAATATGCT ATACACACAA 24240  
 CATTTTGGT ACTAGAAATA CAAGTTTATT GTTTGTGTT TGTGAGACA GGGCCCTGCT 24300  
 CTGTCTCCCA GGCTGGGTGG CACAATCATG GCTCACTACA GTCTTGAAC CTGGGCTTA 24360  
 AGCGATCCTC CCACCTCAGC CTCCAGAGTA GCTGGGACTG CAAACGAGCA CCACCAGCC 24420  
 TGGCTAATAT TTGTATTTTT TGTAGAGATG GGGTTTCACC ATGTTGCCCA GACTGGTCTC 24480  
 25 AAATCCTGG GCTCAAGCAA TGCTCCTGCC TCGGCCTCCC AAAGTGCTGG GATCACAAGT 24540  
 ATGAGCCACT GCACCCGGCT GAGTTTCTGT TGTTTAAGC CGCTTCATTT GTGGTACTTC 24600  
 TTACAGCAGT CCCAGGAAAC TGAGCAACTG CAGAACATCA AAATTGTTTT TCTTCAGCAA 24660  
 AAGGAGAAGC ACTTGTGGTT GGCACCAGCT TTTCTGTGC TCACTTCTGC ATGGCCGCAC 24720  
 CTTTGCCCGA CACGAGTGCA CAGCAGGCTG TGGGGGAGCA ACTGGTTGAG TCAGGCCTCC 24780  
 30 ACTTGTGCCG TATCCCCACC TGCTTTGCTG GACACCCCTG TTTGGGGGGC ACCCACTGCT 24840  
 GCCCCAGACA CCAAGCAAGC ACCAGCTGTG TCCAAACTT ACAGTCACTG TCTTGCCCCG 24900  
 TTTTGTGCTG CTGTAACAGA ATGCCACAGA CTGGGTAATT TAATACAGAA CAGAAATTTA 24960  
 TTTCTCAAA GTTTTGGAGG CTGGGAAGTC CAAGAGCAAG GGGCCATCAG GTCAGGCCT 25020  
 GGTCTCTGCT TCCACGATGG CACCTTGACC ACCGTGTCCT CACGTGGTCA GAGAGAGCCC 25080

	ACTCCAGGA	GCCCTTTTAA	TAGAGCAGAA	CACTGCTGCG	CTGCGGTTAA	GTTTCCAACA	25140
	CGTGAACCTC	GGAGGTGACA	CATTGAGATC	ATAGCAGTCA	CTCTAGGCAG	AGTGTCTGAT	25200
	GTGGTTTTAA	AATACGTTCA	CAGACTGGCC	GGGCACTGTA	GCTCACGTCT	GTAATCCCAA	25260
	CAGTTTGGGA	GGCCAAGGTG	GGTGGATCAC	CTGAGGTCAG	GAGTTCAAGA	CCAGCCTCAC	25320
5	CAACATGGTG	AAACCCCATC	TCTACTAAAA	ATACAAAATT	AGCCAGGTGG	TGCATGCCTG	25380
	TAATCCCAGC	TACTCGGGAG	GCCGAGGCTG	GAGAATCGCT	TGAATCCAGG	AGGTGGAGGT	25440
	TACAGTGAGT	CGAGATCATG	CCATTGCACT	CCAGCCTGGG	CAACAAGAGC	GAAACTCTGT	25500
	CTCAAAAAAT	AAAATAAAAT	AAAATACATT	CACAAGGCCG	GGCACTGTGG	CTCACGCCTG	25560
	TAATCCCAGC	TACTTGGGAG	ACTGAGGCAG	GAGAATCGCT	TATAACCTGG	GAGGTGGAGG	25620
10	TTGCAGTGAG	CTGAGATCAC	ACCGCTACAC	TCTAGCTTGG	GCAACAAGAG	TGAAACTCCG	25680
	TCTCAAAAAA	GTAAAATAAG	GCCCTGCAGG	CATGGTGGCC	CACACCTGTA	ATCCCAGCAC	25740
	TTTAGGAGGC	CAAGCGGTC	GGATCACGAG	GTCAGGAGTT	CGAGACCAGC	CTGGCCAACA	25800
	TGATGAAACC	CCGTCTCTAC	TAGCCTAGCC	AACATGGGGA	AACCCTGTCT	CTACTAAAAA	25860
	TACAAAAAAT	AGCCGGGCAT	GGTGGTGCCT	GCCTGTAATC	CCAGCTACTC	AGGAGGCTGA	25920
15	GGCAGGAGAA	TCGCTTGAAC	CCAGGAAGCA	GAGGGTGCAG	TGAGCCAAGA	TTGCGCCGCT	25980
	GCTCTCTAGC	CTGGGCGACA	GAGCGAGACT	CCATCTCTAA	ATAAATAAAT	AAAATAAGAA	26040
	AATAAAATAT	GTTCACAAAT	CCTTTGACAT	TCCTCACCTC	AAAAGCTGGA	ACCCAACCTC	26100
	CTCCTAAGCA	TGAGTCTTCT	CAGTGACTCA	CTTCTAACAG	CAGAACTTAC	ATGGTTCCCC	26160
	ACACCCAGAG	GACATTGGGT	TCCTCCCAAT	ATCCCCCCAC	CCAGCGACCC	CCACCCAGGT	26220
20	CGCTGGCTTT	GGGTCCCCCA	GAGCCATGTT	TCAAGGACAC	TCAGGCAGCC	CCTGGATGTC	26280
	CATGTGGTAA	GGAATGAAGG	CCTCCTGCCT	GCAGCCTCGG	GAGGGAGCAT	TCTCAGAAGA	26340
	GGATGCCCCA	CCTCCTGCCC	AGCCTTCAGA	TGGCCAGGAC	CTCGTCCAAC	GTCCTGACTG	26400
	CAACATCATG	AGAGACTCCG	AGCCAGAAAC	CCCCAGGTTT	TGTACTCCTG	ACTTATGGGA	26460
	ACTGACAGAT	AATGTTGCTT	GTTAATTAAG	GGGTGACTTG	TCACACACAA	TAGGTCACTA	26520
25	AACAGCTCTG	TCTGGCCTCC	CAGGAGGAGC	CTGCCTTTCC	TTTTCTTCAT	GGGAAAAGTG	26580
	CGATCAGTTT	GTGAAGGAAT	GTCCGCCCCC	ACTTGATGCC	AGAGGCTCCA	CATGGTGAAT	26640
	GTCATAAACT	CCATCTGCCC	TCAGTGCTTT	GCCAGCACCC	GGCCTGCGAT	CAGCTTGCTC	26700
	TTGCGGGAGG	CCAAGGCCCA	CGTGTGTTTG	TGTGTGGTGT	CTGTGTCTGC	GTGCCCATGC	26760
	ATGCCCAGGG	TACAGGGATG	CCATATACAA	ATTCTTTCAA	TGTTGTATGT	GGCATGTGTG	26820
30	TGTCTGTATG	CCCAGGATAC	AGGGATGCTA	TATACAAACT	CTGTTTTTTC	GTTTTTTTTT	26880
	TTTTGAGACA	GAGTCTTGCT	GTTCGCCCCA	GGCCGGACTG	CAGTGGCGCT	ATCTCGGCTC	26940
	ACTGCAAGCT	CCACCTCCCG	GGTTCACGCC	ATCCTCCTGC	CTCAGCCTCC	TGAGTAGCTG	27000
	GAACTACAGG	CGCCCGCCAC	CACACCCGGC	TAATTTTTTG	TATTTTTAGT	AGAGACGGGG	27060
	TTTCAACCATG	TTAGCCAGGA	TGGTCTTGAT	CTCCTGACCT	CGTGATCCAC	CCGCCTCAGC	27120

	CTCCCAAAGT	GCTGGGATTA	CAGGCATGAG	CCACCACGCC	TGGCCTACAA	ACTCTTTCTT	27180
	TTTTTTTTTT	TTTTTTTTGA	GATGGAGTCT	CACTGTCTTC	CAGGCTGGAG	TGCAGTGATG	27240
	CGATCTCAGC	TCACTGCAAG	CTCCACCTCC	CGGGTTCATG	CCATTCTCCT	GCCTCAGCCT	27300
	CCCAAGTAGC	TGGGACTACA	GGCACACACC	ACCACGCCCA	GCTAATTTTT	TGTGTTTTTA	27360
5	GCAGAGATGG	GGTTTCACCA	TGTTAGCCAG	GATGGTCTCG	ATCTCCTGAC	CTCGTGATCC	27420
	GCCCGCCTCG	GCCTCCCAAA	GTGCTGGGAT	TACAGGCGTG	AGCCACTGCG	CCCAGCCTGC	27480
	AAACTCTTTC	AATGTCTTTC	TTTCTCTCT	CCTGCCATCT	TCTCCCTTGC	AGATTTCTTT	27540
	TGTCTCTACG	TCTTCCCCAG	CTGAGTCCGA	GGTCCTGACT	TGCCCACGCT	CCCTGGACTG	27600
	GAGGAGAGGT	GATAGCAAGA	GCTCCTTCAA	GCCCAGGAAT	GCCACCAGGG	CTGCCCCGGG	27660
10	AGAGGAGGAA	GCTGGGTCTC	TCGGGGTTGT	GGGGACCAGA	CACCTTCTA	AGACATGGAC	27720
	TCAGCACAGA	AAGTCTAGAC	ATCCACTACA	AACACATCTC	CCTCCTAACA	GGGGGCCCCCT	27780
	GGGCACCCCA	AGTGGCTGTT	TGGTGGGACA	GGCATGTCCA	TCAGTCAGAA	TATCTTTATT	27840
	TTTTATTTTT	TATTTTTTAT	TTTTGAGAGA	GTTTCACTGG	AGTGCAATGG	CACGATCTCA	27900
	GCTCCCTACA	ACCTCCGCCT	CCCAGGTTCA	AGCGATTCTC	CTGCCTCAGC	CTGCCACGTA	27960
15	GCTGGGATTA	CAGGTGTGAG	CCACCACACC	CAGCTAATTT	TTTTTTTTTT	TTTTTGAGAT	28020
	GGAGTCTCGA	GGCTCTGTCG	CCCAGGCTGG	AGTGCAGAGG	CGCGATCTCA	GCTCACTGAA	28080
	AGCTCCGCCT	CCTGGGTTC	CGCCATTCTC	CTGCCTCAGC	CTCCCGAGTA	GCTGGGATTA	28140
	CAGGCATGAG	CCACCGCGCC	CGGCCAATTT	TGTATTTTTA	GTAGAGACAG	GGTTTCACCA	28200
	TGTTGGTCAG	GCTGGTCTTG	AACTCCTGAC	CTCAGGTGAT	CCACCTCCCT	CGGCCTCCCA	28260
20	AAGTGCTGGG	ATTACAGGCC	TGAGCCACCA	CGCCCAGCCC	AGAATGTCTT	CTTACTTTTT	28320
	ATTACTCTGT	CCCCATCCT	GGGTCCAGAC	CTGTGACCGT	GAACAACCGG	CTGCCAGGG	28380
	GTGAATGGGG	TGAGTGGGGT	GAGTCCACAG	AACAGTGGGG	TGCAGCCCCA	GGGGTCTCGT	28440
	AGCACCTGCC	CCCAGGTCAG	GAAGTCCAC	AGCCTAGAGG	CTCCAGCCTC	AGATGCATAC	28500
	ATATGTAGGC	CCTGCCCTTT	CCTCCTGAGC	GGCGGGCCAC	AGAGTCTGA	ACAACAGGAA	28560
25	GCCCCTGAGG	AGGGCTCCGC	CCTGAGGGAG	GGCAGGGGAG	CCCCCGCCAG	CCCCACCCAC	28620
	AGCAGCGGGC	CCTGCCACCC	CCCACCCTGA	CACCTCACCC	CTTGGAATCC	AGAGAGGAAA	28680
	GTGGGCTTGT	GTGTAGTTTA	CATGCTCATA	TCTTAAATC	ACCGTTGTCA	ATAGAACAAT	28740
	TCATAATAAT	GATGATAAAA	TAAGATTAT	AACCAGCTTC	AGTCTGGAGA	TACACACAGA	28800
	GCAGATCTTC	ACTCCAGAC	AGGGAGCCCG	CAGTGCCCC	CGACCCACA	GGTGCAGGAC	28860
30	ACACACAGAC	AGTTCAACCA	TGTCTTAAAC	ACACAGGTGT	TTATTTAATT	GTTCAATTGA	28920
	TTGAATTTTT	AAGTTCACTT	TACTACGTGG	ATGAGATGGG	TGCATATTAC	AGTAGGCTTT	28980
	CGCTATGAGC	GCTGCCACCA	TGAGGAATAT	CCCAGCCCTC	AGTTCTGCTT	CCCTTTCTGA	29040
	GTCCCACAAA	AGCCAGATGT	GGACAGCCTT	GGGTCCCCAT	CCCAGCTGGC	TGCTCCTTCT	29100
	GGGGCTGTCT	TGGTGGGGAG	AGGGAGATGG	GGCAGTGGGT	CCCTGCTGAC	CCCTGAGCCC	29160



TGCAGGGGTC AGGATCCTCC CGTGGTCCCT GGGTGTGGCT CTGGAAGACA CTGGCAGTGC 29220  
 CCGGCCAAGG CCTCCCGCAG GATGGAAGTT GAGGGCCCTG GCTCTGGGTC CTAAGAGAAC 29280  
 TCAGCCGCCC CCTTCACACT TTACAGCAAG GGGCCAGGCA GCAGCTTTGG GATGGGGCTT 29340  
 CCGTGGAGAA GTGGGGGATG CTGCAGTGGT ACAAAGACAG CCTCCCCAC CGCCATCCTC 29400  
 5 CAGCTGACCG TCCTCCAAGG CCAGCACTGG GCGTCCAAGG GAAAGAAGGA ACTCAGCCCA 29460  
 GAGGGTGTGG GCAGGAGAGG CCTGGAGTCA GGCCTCCACC CACAGCCCCC TGTGGGTGCC 29520  
 AAGTGGGAAG GGTGTGGGG CTGGCTTGGG AACCTTACCC GCTGCCCTTC CAACACCTGG 29580  
 ATCTGTGGGC AGCGGTCCCA CAAAATCCCC CTTGGGGCTC CCTGAGGAGG ACTTGTGGCT 29640  
 GCCGCTTCCA CCAGGGCAGA GGGCACAGGA GGGGCCAGCA CTCCAAAGGG CTCTAGGGTG 29700  
 10 GGTCTTTCAA GGACATCTGC AAAGCCCTGG TGGGGAGGGG CCTGGGCCAG AGGCTCTTTG 29760  
 GAACTCTTGC ACTTCTGAGT GGGGGACTGT CCATGCTGCC CACAACCTCT AGACCATGCA 29820  
 GCCTGCTCAT GGTTCCTTGG CAGAGAATGC CCACTCCCCA GCAGACTCAG GGCAGGCCCC 29880  
 CAACTGCAGG CTTCCAGGAA GGCCAGGGT GTCCACCTCA CGCCAGGTGG TCTCAGAGGA 29940  
 CCCCTGTGCA ACCACATTAA GGAAAGCTGC AGCCCCACC CACCCGCTG CCAGTTCAAC 30000  
 15 AAGCACCGGC TGCACACGCA GGCTCCCAGG CACCATCACC CCCCTCCCCC GTCGCCCCCTC 30060  
 CCTCACGGGG AGCCCCCTTC CCCTGGAAG ACAGCAGGTA CTGTAGCCTC GCCTGCTGGC 30120  
 CAGGGGCGCC GGCTCAGAGG ACCTGCCCTG ACCTGCACGT GCTGACCAGA CAGCCCAGCG 30180  
 TAAGGACCCC CGATCCCACG CCACCGCCCT GGGTTTACCA CGGTCACCAC CACCTCTCTC 30240  
 ACAGGGCCCC CGGGGAGCCC AGCCGCGCCC GGCCTGGTGT CTGCACCGAG GGACCGCGTC 30300  
 20 TCACGCCCCG CGGCTCCTGC AGGGGAAGCC GTGGTCAGCG ACTCACCACG AGGACAGGGC 30360  
 AGGGCGGCTG AGTGCGGAAG AGAAGCATGA AGCTGGGGGC GGGGGTGGGG GAGGAGGAAC 30420  
 AAAAGTTGCA TCTAGACAGA GGTGAACGAA ACAAACCAA AACCCGAACG TGTTCGTCG 30480  
 CAGGATGGGC GCCGCCGCTC CCGGGCCCTT AGCCCGACAT CTC'TCTCGC TGCTCCTTGT 30540  
 TCCTGCGCAC CTCGGCCGCG TGCACTCCT GCAGGACAGG GGGCGGGAGG GCCTGAGGGC 30600  
 25 GGGGGTGGCT TGGGGCGACT CCGGAACCC CCAGGCGCGC AGGCCGTGGC GCCCTGGCAC 30660  
 CCGCCCCGCC TCATCCGGGC TGGCCTTCGG CAGGACCCTG ACTGAGTTGA GGGGGCGGGA 30720  
 GCACCGGGGA GGCAGAGC AAGGCCAGG ACCAAGGACG GGTTCCTGG GAGCTGGCTG 30780  
 GGCCCCGCTT CTAGCTCGTA CCGGAGCCGA GCTTCCTTCA GGGCACTTTC AATATAATGA 30840  
 ATTTAGCCAT CTATTACTGC GGCTAGTTAC TGTCCCGCCA GGACCAGACT CTGGACCTGC 30900  
 30 CTCGTGCGCT GCTGGGGACG CCCAGTAAAC ACGGGAGGAG CCCCCGACCC CCACCCAGC 30960  
 TCAGCGCCTC GGAGTCCCCG GCCCGCTCT GCGCCCTCC GAGCTCCGCC CTAGCCCCGC 31020  
 CCCCCCCAG TGCCCCGCC CCTGCCTGCT GCTAGCCCTG CCCCCGCCCC GGCCCTGCGC 31080  
 CGCTCCGAGC TCCGCCCTGG CCCCCCCCCG GCCCCTGCCC GCTCCGAGCT CCGCCCTGGC 31140  
 CCGCCCCCCC GCCCAGTGCC CCGCCCCCTG CTGCTGCTA GCCCTGCCCC CGCCCCGGCC 31200

CCTGCCCCGCT CCGAGCTCCG CCCCCGGCCCC GCCCCGGCCC CTGCCCCGCTC CGAGCTCCGC 31260  
 CCTGGCCCCG CCCCCGCCCC GTGCCCCGCC CCTGACTGC TGCTAGCCCT GCCCCGCCCC 31320  
 CGGCCCCCTGC CCGCTCCGAG CTCCGCCCCG GCCCCGCCCC GGCCCCCTGCC CGCTCCGAGC 31380  
 TCCGCCCCGG CCCCCCCCCG GCCCCCTGCC GCTCCGAGCT TCGCCCCGGC CCGCCCCCGG 31440  
 5 CCCCCTGCCCC CTCCGAGCTC CGCCCCGGCC CCGCCCCCGC ACCTTCTCGC GCAGCCGCTC 31500  
 GCGCAGTGCG GCCAGGTGTG CCTCGCGGAT CTCCTTGCTG AGCTCCATCT TGTAAGTTGAG 31560  
 CTTCTCCTCC GCCTGGCGGC TGAAGTTGTT ATTCTCCTCC AGCGCCTTGT GCAGCACCTC 31620  
 GCGCTCGTGC TCGCGCCGCT CCGCCAGCTG CTTACGACC TCGCCTCCT GCGTCTGTGC 31680  
 GGGGCCGGCG GCGCGCGGTG AGCGGCAACC CCGGGCCCTG CCGGGCCGGA CTCCTCCCTG 31740  
 10 CTCTCCGCTC CCGCCCCAGC GCGCGCTCGC CTCACCTGGC GCCTCCACCT GCCCAGGCTC 31800  
 CGGTGGGCGC CGGACCCCC GGGCGCTGCC CTGGGAACCC TCGCCTGCCA TCCGGCCTGT 31860  
 GGTGCGGGCA GGGCCAGGGG GTCGCGATCC GCGCCCCCG CCCCCGTCCC TGCCTCGCGC 31920  
 GCGGGTCCCG CGGTCTGGC TCGCCCCAGG GCCCCCGCCA TACCTGCGC CCACTGCACA 31980  
 CCCTGCCCTG CGCGTCTGCC CCTCCAAGGA CCAGCAGCAA GAAACCTAA ACTTGTGGGC 32040  
 15 GGTCTCTGAG CTTTGTCTCT TCCTCGGACA TCCGCCCCACT GAGCAGAGTA GCTGCTTGTT 32100  
 ACACACCGGG TTCCCAGCTC CCAATTAGGT GCCCAGGAGC GGAGGGTCCC CAGGGATGCT 32160  
 GGGGGAGGGG CCGGCTGGTG ACCCCTGGGA GGAGAGCGGG GCAGCAGGAC CCGCACCCAC 32220  
 ATGCCAGTCC CTACTAGTCA GCCCTGTGAA CCCTGGTCTC TGGCCTCACC GGGAAGGGAA 32280  
 CGGAGCCGCT TCCCCTGCCC AATGCGTTGG CCTCCAGGGT GGCACCCCCA AAAGGACATT 32340  
 20 TTTATCTCTG TTTTCTCTC AGAGGGGCTG GTGGGAGGGG AGGCTGCAGG GAGGGGACCT 32400  
 GGAGCCCACA CCCACCTCTC CCAGGGCCCC TCCGCCCTCC AGCAAGCCTC AGGGTCTTCA 32460  
 CACATGAGGC CCTTCCTCCA GCTTCCCTGT CTGGGAGAGG GATGCCCCAC CCGACGTCCC 32520  
 CAGGGCCCAT CTGGGGACCA CCCCCTAGCA TCCTGTGGC CCTGACAAGG GTGCCTCCCA 32580  
 CCCTCACCAG AGGCTCCTGC TCCTTCCAGG TGGCCGCCCTC GGAACCTTC CTCCTCTCCA 32640  
 25 TCCCTTTCTT TTTTGTCTT TGTGTGTTT TTGAAATGGA GTCTCACCCT GTCGCCCCGG 32700  
 CTGAGGAGTG CAGTGGCGCA GTCTCGGCTC ACTGCATCCT CCACTTCTTG GGTCAAGCA 32760  
 ATTCCCCTGC CTCAGACTCC CTAGTAGGTG GGATTACAGG TGTGCACCAC CACACCTGGC 32820  
 TAATTTTGTA TTTTGTAGTAC AGATGGGGTT TCACCATGTT GGCCAGGCTG ATCTTGAAC 32880  
 TCCAACCTCA AGTGATCTGC CTGCCTCAGC TTCCCAAAGT TCTGGGATTA CAGGCGTGAG 32940  
 30 CCACCACACC CGGCCTCTCC CCATCCCAT CTTATCTCTC AGAAAGAGGC CCAGGGAGCC 33000  
 ACAGCCCCCT CTGCTCCAGG CCAAGGCACT GACCAAGCCT GTCCGGGAGC ACCCTGCTTC 33060  
 TTGAGGCCCC TGTCCCCGTG GGCCGCTCC GTTGAACTC CTGGGGGTG GGGGATGGAG 33120  
 GACTCCTTGC CTTCTCCGC TCCTCGGCTG CCTCCAGCCG CTTTTCAGC TCCTCCAGGG 33180  
 AGGTGTCCTT CTTCTTGGGT GGGGAGGAGA GCATAGGGCT CTCTGGGGAC AGGTCAGAAG 33240

GGGACTTGAG GATGACCTCG AAGCTCTGGC CTGAGGCCCG CTTGTCCAGC TGCTTCACCT 33300  
 CCATGTCTGC AGGGCAAGAC CAGAGTAGAG CTTCAGAGGC CCGGCCAGGG CATGGCGTGG 33360  
 GCTGAGCGGG ATGCTCCCAG CACACATCCA ACCCCAGGGC TGGGCGAGAG GGGGTGGCTG 33420  
 CTCCCGCAGG AATCCAGGC TTCAGCCCCC AGGATGGGCC CCTTCCCCCT AGAACCTCCC 33480  
 5 TCTCCAGAGG CAGCCAGGAC GGGAGTTCAG AGAGACTGCC GGAGGCCGGG GGAAAAGGTG 33540  
 AGGTGGGCAG GCACCGCAGG GAAGGGCAGG CGGCAGCCAG GCACTCACCC CCGTACTGGT 33600  
 AGACGGTATT GGGGTGCGGC TGTGTGTAGA AGCAGGAGCA GATGAGCGAC AGCACCGACA 33660  
 GCTCCTTCAT CTTCTCCTTG TAGGCTGTGG GCACAAGGCT GGGCTGAGCA AGCACCCTG 33720  
 GGGCCTGCCC ACCTGGGCC CCGTTTCCC TCCCCATGGC TGCCCTCTATC ATGTCTCTGT 33780  
 10 GAGACACGGA GCTGCCCAGC ACGCTCTCTT GTGTGTCTCC ACACCGCCGG CCCCTTCGTC 33840  
 TCTCCAGCTC TCTCGCTTCC AGACGTCGGC ACTGTCTCCG TGGTGTGTCC CCTGCCTTCT 33900  
 GTCTCTCTCG CCCTCTGCCT CTCCCCGCTT TTCCTCTCTC TCGGCATTAA TGTCTGTCTC 33960  
 ATCTTCCACA CTGACTTGTT TCTCCATCCT TCTCCTGCCT GCTGTGGTCT GAATGTTTCC 34020  
 ATTACCCAAA ACTCATGTGT TGAAATCGTA ACCCCAAGGT GCCGGTGTGC GGAGGTGAGG 34080  
 15 CATTCGGAGG GAATTAGGCC ATGAGGATAG AGCCCTCCTA AGTGGCCCCA GAGTGGGGCT 34140  
 TCAGAGAACT CCCTCACCTT CCATCATGTG AGGACACAGC CAGAAGACGC CACCCGTCTA 34200  
 TGTACCAGGA GGCGAGACCT CTCCAGGCAC CGACTCTGCC GGCACCTGA TCCTGGACTT 34260  
 TCTGGCCTCC AGAGCGATGG GAAATAAGTT CCTGTCTGTCT ATAAACCACT CAGTCTCAGG 34320  
 TACCTGCCCC GACTGACAAA GTGGCTACCC CTGCCTGTCT GGGTCTCTGT TTACCTTCTG 34380  
 20 TGTGTCTGAC TCTGTCACTG TCATTGTATC TTTCTGTGTC TCTGGGGGTA GCCCTGACT 34440  
 CTGTCTTTCT CCCTGAGTGC ATCTTTCTGT GATTCTTGT CACTGTGTGT CTTTCTGACT 34500  
 CTTACCTCCC TCTGTCCCGC TACTTCTCTC TCCCCTCCTC CTCCTTCCCA CTCCTCGCCA 34560  
 GCTCAAGCAG GCAAGATTTA CTCATGACGG GACCAGCACA GATGCAAACC CTCTGTGGGC 34620  
 AGGACTTTCT TGGGCTGTAA ACCTGGATGA AGCCCTCAGA CCCTCCTTTT TCCTTCCCAA 34680  
 25 TGATTGTGTG GTCACCTTGA GATGAAACCA GGCCCTCTCC AGGCACATGC TCTCTGTCTA 34740  
 TCTAGGGCTG GGCTTGGGCC ACTGATGCCA CCAAGGAGCA AGGGAGGGAA GCTGTCCGTT 34800  
 CAGCACCAACA GCCAGCCCTC TTGCCCATTC AGGTCAATCA AGTGCCCAACC AGCCAGTGTG 34860  
 CCTGCTGCCC AACCCAAACC AGAAGCAAGC CGGGCTCCTG TGGCCCTGTG CCCTGTGAGG 34920  
 GGAAGAGGAA GGCGCCTGCT GTCACAGTGA AAATAATTTA GCTCTTTTGG TCTATTCAGG 34980  
 30 GCGAACCTCA TTCCTAAGCA GACACGCTGG CCCGGTTTCT CACTAGTGCT CGATAATCCT 35040  
 TTTGGCTGGG TGCACTGGCT CATTTAACTG TAATCCCAGC ACTTGGGAG GCCAAGGCAG 35100  
 GTGGAACACC TGAGGTCAGG AGTTTGAGAC CAGCCTGACC AACATGGTGA AACCCGATCT 35160  
 CTACTAAAAA TATAAAAATT AGCCAGGCGT GGTGGCAGGC ACCTGTAATC CTAGCTACTT 35220  
 GGGAGGCTGA GGCAGGAGAA TCGCTTGAAC CTGGGAGGCG GAGGTTGCAG TGAGCCGAGG 35280

TCGCGCCATC GCACTCCAGC CTGGGTGACA GTGTGAGACT CCGTCTCAA ACAGAAAGAA 35340  
 AAAGAGAGAG AGGAAGAAAG GAAGGAGGGA GGGAGGGAGG AAAAGAAGAA AGGAAAGGAA 35400  
 AGGAAGACAG ACAAGGCAGA AGTAATCAAG CCTTTCATGG TGAGCTGGGT CTTCTGGTGA 35460  
 CAGTGACAGAG AATGGTCTGT CCTGACTTAA ATTTCTGGT GACCTACACT TTTCTGGACA 35520  
 5 GAGCAGCACA GAGCCCAAGA GGGTGTAAGG AGGAGCAGAA AGGAATCCCA GGGTGGGCAG 35580  
 GCCCGTGCGA GAGCCTTTGG GGAAGGAAT GAGACTTTGA GCCGGAAGC GAGGCAAAGC 35640  
 TACCTGTCTT GGTCAATTGTC TTCAGGGAGG GAGATGGAGG GGGACCAGGT GGGGGAGCCT 35700  
 CACAGGGGAC TTTGGTCTGA CTTGTCAAGT TTTCTTTTTT TCTTTTGTAG ATGGAGTCTT 35760  
 GCACTGTTGC CCAGGCTGCA GTGCAGTGGT GCGATCTCGG CTCACCGCAA GCTCCGCCTC 35820  
 10 CTGGGTTTAC ACCATTCTCC TGCCTCAGCC TCCCAGTAG CTGGGACCAC AGGCACCGCC 35880  
 ACCACACCCA GCTAATTTTT TGTATTTTTA GTAGAGACGG GGTTCACATA TATTAGCCAG 35940  
 GATAGTCTCG ATCTCCTGAC CTCGTGATCC GCCCGCCTCG ACCTCCCAA GTGCTGGGAT 36000  
 TACAGGTGTG AGCCACTGTG CCTGGCCTAC TTTATTTTTT AGAAACAGGA CTGTGCTCTG 36060  
 TTGCCCATGC TGGAGTGTAG GGTGCAGCTG TGCGGTTTAC TGCAGCCTTG AACTTCTGGG 36120  
 15 CTTGACGGAT CCTGCCATCT TAGCAGCTGG GACTACAGGT GCATGCCAGC ACACCAGTTT 36180  
 TCTTTTTTTT TTTATCTCTG CTCACTGCAA TTCCGCCTCC TGGGTCTAG CGATTCTCCT 36240  
 GCCTCAGCCT CCCAAGTAGC AGGGATTACA CGCACATGCC ACCACACCG GCTAATTTTT 36300  
 GTATTTTTAG TAGAGACAGG GTTTCACAT GTTGTCAGG CTGGTCTTGA GCCACCGCGC 36360  
 CCGCCCGGCC TACACACCAG CTTAAAAAA AGAAAAAAT AGCTGGGCGT GGTGGCTCAT 36420  
 20 GCCTGTAATC CCAGCACTTT GGGAGGCTGA GGCAGGCAGA TCACCTGAGG TCAGGAGTTC 36480  
 AAGACCAACC TGGCCAACAT GGCAGAACCC TGTCTCTACT ACAAATATAA AAATCAGCCA 36540  
 GCGGTGGTGG CGGGCTCCTC TAATCCAGC TACTTGGGAG GCTGAGGCAG GAGAATCACT 36600  
 TGAAACCGGG AGGTGGAGGT TGAAGTGAGC CAAGATCGAG CTAATGCACT CCAGCCTGGG 36660  
 AGCAAGACTC CCGTCTCAA AAAAAAAAAA AAATTTGTAG TGGTATGGAG GCCGGGCATG 36720  
 25 GTGGCTCAGC CCTGTAATCC CAGAACTTTG AGGGCCCAAG GCGGGCAGAT CATGAGGTCA 36780  
 GGAGTTCCGAG ACCAGCCTGA CCAAGATGAT GAAACCCTGT CTCTACTAAA AATAACAAAA 36840  
 ATTAGCCAGG CATGGTGGCG GGCACGTGTA GTCCAGCTA CTCGGGAGAC TGAGACGGGA 36900  
 GAATCGCTTG AACCCAGGAG GCAGAGGTTG CAGTGAGCTG AGATCACGCC ACTGCACTCC 36960  
 AGCCTGGGTG ACAGAGTGAG ACTCTGTCTC AAAAACAAAC ACAACAAAC ATATATATAT 37020  
 30 ATACATGTAT ATATATAATA TATATATACG TATATATACA CGTGATATA TATAATATAT 37080  
 ATACGTATAT ATACACGTGT ATATATAATA TATATACGTA TATATGTATA TATTAATATA 37140  
 TATACGTATA TATACAGTG TATATATTAA TATATATACG TATATATACA CGTGATATA 37200  
 TATTAATATA TATACGTATA TATGTGTGTG TGTGTATATA TATATGTATA TATATATATA 37260  
 TATATACATA TATATATACA GAGAGAGAGA GAGTAGTGAT AGGTCTTGCT GTCTTGCTCA 37320

	GGCTGATCTT	GAAC	TCCCGG	CCTCAAGAGA	CCCTCCCACC	TCAGCCTCCC	AAAGCACTAG	37380
	GATTATAGGT	GTAA	GCCACA	GTACCTAGCC	TATTAAAAAT	TAATGTTAAA	CAAGAGGATG	37440
	TGATGAGGGA	GTTAGAGGGT	GTGCCAGCCA	TGTGTTCCAC	AGCAGCAGGT	CAGGAGACAT		37500
	TGGGGACATT	TAGAGGAGCT	GAAGAGGTGG	CCAACCTGT	GCTCAGGAGG	ACGGGGGAGG		37560
5	GAGAGAGCAA	GAGGGAGTTT	GGGCTGGGGC	AGAACGTACC	TGGGTCCTGA	GAGGATAAGA		37620
	AGGTAGGGAC	TTGGCCCCCTC	CAGGCCTGAC	TCTGCCAGCA	ACCAGCTCCC	TATCAGCAGA		37680
	CTCCAGGCCC	CTACCCCTTCA	GCTCATCCTT	CCTTATCACA	CATCCAAAAC	TCTGAATGTG		37740
	GGCGGGCGCA	GTGGCTCACG	CCTGTAATCC	CAGAACCTTG	GGAGGCTGAG	GCAGGAGGAT		37800
	CGCTTGAGAA	CAAGAGTTTG	AGACCAGCCT	AGGCAACATG	GTGAAACCCC	ATCTCTACTA		37860
10	AAAATATAAA	AATTAGCTGG	GTGTGGTGGC	ACATGCCTGT	TGCCCCAGCT	ACTCAGGAGG		37920
	CTGAGGCAGG	AGAATCACTT	GAGCCTGGAA	GGCGGAAGTT	GTAGTGAGCA	GAGATTGTGC		37980
	CACTGCGTTC	CAGCCTGGGC	AACACAGCGA	GACTCTGTCT	CAAAAAACAA	AAACTGGAAT		38040
	GTGTTTACCA	TAAAGGCCAG	AAAATGTGAT	TAACAGCTGC	TCAAAGCCCC	TGTCTGCCCT		38100
	AAGCCTGAAA	TTTTACCCGA	AAAAAAGATC	TGTAGGCTCA	TACAGAGGAA	GGACAAACAC		38160
15	CAGGGAGGCT	CTCTTCCAGT	TTGCTTCACC	TCAGCAAGCA	GACGGCTGGC	AGCAATTTGG		38220
	GGGCAGGTGT	GAGCACCTGC	ATCATCAGGA	AAGAAGGGGC	ACGGTGGGGA	CGCAGGTCAG		38280
	ACCTCTCACA	GGTCTTGCT	CTGCCCAGGA	GACACGTGTC	CAACTGAGAG	GTGAGGAACT		38340
	GGGTTCTGCA	GCTGCAGACA	CAGGTGCGGC	TCAGCATCTG	ATGGCCACGG	AGACCCCTTG		38400
	GCTTGGCTTC	TCCCAGCTGG	TGGCCCATGA	GGAGCTTCTA	TCCCAAGAGA	CTGTCCCTCA		38460
20	AGGAGCAAGT	GGGACCAGGT	ACCCACAGGA	CGGAGCCTGG	GAGTGAGGCC	TGCCCTGTGG		38520
	TCTGGCTACA	GGGAGGAAGG	GCAGATTGGA	GGGGGCAGGA	CAGCAGGTCA	GGAATTGGCC		38580
	AACTCTGGAG	AGAGCAAGCA	AGGGGAAGTC	TGCGCACAGG	GCAGGGCTGG	TCAGGGGCGA		38640
	GGCAGGGCAT	TGGACCAGTA	TTTTCAGAGC	TGGTGAGGCT	TAAAGAGCAT	GTCTACTGCC		38700
	TCTTATTACA	GAGAGAGGAT	GCCGAGGCCC	AGACCCATCC	AGGCCACCTC	TCCACAGACA		38760
25	CAGCTGGTGC	CAGGGAAGCC	CCTCCCAGAG	CCTCAAGGCA	TTGCTCCCTC	TCTCTCTCTC		38820
	TTTTTGTTTT	TTTGAGACG	GAGTCTCACT	CTGTCTCCCA	GGCTGGAGTG	CAGTGGTACA		38880
	ATCTCGGCTC	ACGGCAAGCT	CCGCCTCCCG	GATTACAGCC	ATTCTCCTGC	CTCAGCCTCC		38940
	CGAATAGCTG	GGACTACAGG	CGCCC GCCAC	CACGCCCAGC	TAATTTTTTG	TATTTTTAGT		39000
	AGAGACGGGG	TTTCACTGTG	TTAGCCAGGA	TGGTCTCGAT	CTCCTGACCT	TGTGATCCGC		39060
30	CCGTCTCAGC	CTCCCAAAGT	GCTGGGATTA	CAGGTGTGAG	CCACCGCGCC	TGGACTTTTT		39120
	TTTTTTTTTA	AGACGGGGTC	TCACTCTGTC	ACCCAGGCTG	GAGTG CAGTG	GCGCGATGTC		39180
	GGCTCACTGC	AACCTCTGCC	TCCCCAGTTC	AAGTGATTCT	CCTGCCTCAG	CCTCCCAAGT		39240
	AGCTAGAATT	ACAGGCACAT	GCCACCATGC	CCAGCTAATT	TTCTGTATTT	TTAGTAGAGA		39300
	TGAGGTTTCA	CCATGTTGGC	CAGGCTGGTC	TTGAACTCCT	GACCTCCGGT	GATCTGCCCA		39360

CCTCAGCCTC CCAAAGTGCT GGGATGACAG GCGTGAGCCC CCGCGCCTGG CCCCCCGCAG 39420  
 TGCTGGGATT ACAGGCGTGA GCGCCCGCGC CCGGCCCTC CCTCTCTTTG ACTCCCTTCT 39480  
 TTCTCACC GC CCCCTCCCCA CCATCCTTCC CCTTCACTGA CTTCAGGGAG TTA AAAACAA 39540  
 TTCTCGCAGT GAGCTGGGCT TGT TTTGTCT CCCTGCTTCT CTTTGTAATA AACATTAGAT 39600  
 5 ACCGAGGAAA TGGGATTGG CCTTTGGATG ATTCATGAGC AGGAGTCAGA AAAAGGCACC 39660  
 AGGTTGGCCT CAAGCAGCAG GGTATAGTAG TGCCCGCTCC CAGGGTCACA CCTCAGCCCC 39720  
 ACCCTCCCG CCGTCCAGGT GGATGGTGCC CACTCCCAGG GTCACACCTC ACGCCACCC 39780  
 CTCCCGCCGT CCAGGTGGAT GGTGCCCACT CCCAGGGTCA CACCTCACGC CCACCCCTCC 39840  
 CGTCGCCAG GTGGATGGTG CCCACTCCCA GGGTCACACC TCACGCCCGC CCCTCCCACC 39900  
 10 CACCCGGGTG GATGGTGCCC GCTCCCAGGG TCACACCTGA CGCCACCCG GGTGGATGGT 39960  
 GCGCGCTCCC AGGGTCACAC CTCACGCCCA CCCCTCCCGC CCGCCGGGT GGTGGTGCC 40020  
 CGCTCCCAGG GTCACACCTC ACGCCACCC CTCCCGCCGT CCAGGTGGAT GGTGCCCACT 40080  
 CCCAGGGTCA CACCTCACGC CCACCCCTCC CGCCGCCAG GTGGATGGTG CCCACTCCCA 40140  
 GGGTCACACC TCACACCCAC CCCTCCCGCC CACCCGGGTG GATGCCCTTA TCAGCTCTCC 40200  
 15 TTCTCCTTCT CTTTCGTCTT CTTCGTCTTC CTCCTCTTCT TTCTCTTTT TTTTTTTTTT 40260  
 TAGAAAGAGT TTCTACTCTT GTCGCCAGG CTGGAGTGCA ATGGCACAAT CTCAGCTCAC 40320  
 TGCAACCTCC CTCTCCCCGG GTCAAGCAAT TATCCTGCCT CAGTCTCCCA GATGCTGGG 40380  
 ATCAGAGGAG TGTGTACCA CACCTGGCTA ATTTGTACT TTTAGCAGAG AGGGGGGATT 40440  
 TCACCATGTT GGCCAGGCTA GTCTCGAACT CTTGACCTCA GTTTATCCAC CGGCCTCAGC 40500  
 20 CTCTCAAAGT GCTGGGATTA CAGGCATGAG CCACCTATC TGCCTCACTT CTACAGAGGA 40560  
 GGAATGAAG CTCAGAGAGG GCAAGCATC CACCCAGCAT CACACAGAGT GCCGGGTGAG 40620  
 AGCCAGTCA TGAGCCTGGG CCTGACTGCA GGCTCCTGTT GGGAGCTCGC GGAGGTGGGG 40680  
 GATCTGTCCA GAACTGAGAG GCCAGGGGAC CACAGTGGCC TCTGACCCCT GGAGGGCCCT 40740  
 GGAGGCTGCT GCCGGCTCCC CCGGGGGGCA GATGGAGGTC ACTGTCACCC AGGCTGCTTC 40800  
 25 TCATGGTGCC AGGAGCACAG CATGGCAGGA GCCACCAGCC GATTTCCTT TCCCTGGGCA 40860  
 GGAAACTCAG AAATGTGGCT ACCACAGTCA GGCTGCTTGA CGTGCGGTGA GCACTCATCT 40920  
 CTTAGCAGGC AAGCGGCCAA GCACCTTTCC TGAAATATTG AGGCCTCAGA ACAAGCCCCA 40980  
 GGAGAGGTGC CAGCACCGTC ATCTCTACCC AGATAAGGAG ACCCAGGTCC TGAGAGGTTA 41040  
 GGCAGCTCGG ACAACACCAC ACAGCTGGAG GAGGTCAGAC TCTGGGTGTC AGAAGGAGAA 41100  
 30 TGTGAGCAGA GGCCACAAAA GAGCGAGGAG CCACTGCCCA GATGCCGAGA TGCCCTCGCC 41160  
 CTCCAGCTC AGCCCCAGGA ACCGAGCCCA TGGGGAGGGA CCGTCAGGGA AAGGCTGTCA 41220  
 GGAAGGGCAG GAGGCGGCCC TGGAGAGGAC GCGCTGCCC TCAGGGGCAG GAGGGGAGTC 41280  
 CCCTCCGCTG AGAGCCCCC CACCCCACT ATCCCGGGG GTGTCCAGGA GGAGGCGGAG 41340  
 GGAGGAAGCG CAGATGGACA GGACTCCAG ATAGGGTGGG GAGGTGTGGC CGGTGACACA 41400

CACGGTCCCC TCCTGGCAGG TGCTGAAGTC ACCTGGAGCC TCCAAGCCCG TGGGGCCTGA 41460  
GGGGCGGGGT CAGGTCGGGC ACGCGTGGGT GGGCGGAGTT CTGCGCCCCG GGCCAAGGCG 41520  
CCCCAGTTGA ACCAGTCAGC TCGGGAGAGG GACCGCGGCG ACCTGTCCCG GGGGCGTAAG 41580  
AAAAGGTGGG AGGGAGTGCG GCTCGTGAAC GGGGGCGGCG ATGGGAAGGA GGTGCGGCCC 41640  
5 TTCGTCCTGT CCTCCCAAAC GTCGAGTGAA AAACGAAGCG GGTTCCTGCGG CCTCGCGGCG 41700  
GAGCAGAGCG TTTCGGGAAG GCGGGGCCCA GCGTCCTCGC GCGCGAGGTC GCGCGGCAGC 41760  
TCCCCTGCGT CCAGAATCCG CCCCCCGCCC GGGCCTGCGC CCGCCCCCTCC GCCTGAGCTC 41820  
CGCGCGGGAC GGGCCGGGAG GCCGGGGTGG GCGCTACCTT CGAAGGCGGT GGGTCCGCCC 41880  
CGCGGGAGGT GGAGGGGCGG GAGGGGCGGA GCCCTCTGGT CTCCGGAGGG TTTGGGGATC 41940  
10 GCAGTCGCCC CTCCCCATC CAGACCCCGC GCGCAAAGG GCAGTGCGTT TTCTGGCCAG 42000  
AGCAGGTGGC GCGGGCGTCG CAAAGGGTGG TCCCCGAGGC CGCAGCGGTG TGGGGGAGG 42060  
GCGCGGTCCC CCTCACTCCG GGCTCCGCGG TGTCTGGCCC GCGCCCCCTCC TTCAGCGCCC 42120  
CCTCCAGCCC CTGTGCTGCA CTGGCGCGGG GAGCGCGGGG TTCCCGGCTG GGGCTTTGGC 42180  
AGAGGGTCCC ACCCTCTCCC CGCCTCCCCA CGAAGGCTCT GCGGACCCA GATCTCGGGT 42240  
15 CGCCGACGC CCCAGGGACC CCGCCCGCAC ATCGCGAGCG CGCCACCCG GTCGCGAGCC 42300  
CACGCCCGGG TCTGGGAGCC ACCCTCGGC AGTCGCGCCC TGCGTGGCAC GCTGCTCCCC 42360  
CAGGGGCGAG GCGCCCCCGC CCGACGTCCC GGTCCCGAGC GCTCCCCGGC GCGGCGCTC 42420  
GCAGCCAGC GCGCCACCAG CCGCGCCGGC GCCGAGACC CCAGCCTCGG GCGGGTCCGG 42480  
CCCAGGCTTG CAACGCGCAG GGTAGGAGAA GGGAAATTGG CGTCCGCTGC CGGCCGCTGC 42540  
20 CCCAGGCGAG GCCAGACGAG GCCTCTGCTC AGATCCCGCC GCGCCACAAA GCGCGTGCC 42600  
CCGGAGCCTA CCGGAAATGG TGCTGGCCAT GGTGCTGGCG GCGGTGGGC CTGCGGAGGC 42660  
TGGAGAGGCG CAAGTGGCGG CCGGAGCTGC AGACGGCTGG TGCTGCAGTG CCGGGGAGGG 42720  
GAGGGGAGAG GAGTGGAGGG AGCGAGGGCG GCGGGGAGGC GGGCGCGGCG GGAGAGAGAG 42780  
AGGGAGGGAG ACAGAGGGAG ACAGAGAGAG GGTGGGGGA AGGAGCGGGG GGAGAGGGA 42840  
25 GGGAGGGTTG GGGGAAGGAG AGAGAGAGAG AGAGAGACTG CGGGGCGGG GGAAGGAGGG 42900  
AGGGAGGAAG GGAGGGAGGA AGAGAGAGAG GAGCAAGCGC CTGGCTGCGG AAGGGGCCG 42960  
GGCTCTCAGG GGGAGAGGGC GGAGGAGGGG GGCTACCCGA ACTGCAACAA GACCCCCAC 43020  
CCTCCAACCG CTCACAGCGG GACAGCTGCT TCTCAACTT GGCTTTGTGA GGCCTGAGAG 43080  
TGGGGTGGGG GTGGAGATGA GCGCCCATTC CCCAGGCGAG GCGGGGAGG GGCAATGCCG 43140  
30 GAGGAGCAGG TCCCACCCAT GGGGTGGGGC CGCAGAGCTC TTCGCGCCA AGGCCGCTGT 43200  
AGGCTGGGCT GCGCCCAACA GGTCCAGGT CTGTGCTGCT CATCGGAGAG GATGCCACAG 43260  
CCACAGGGGT GGGCGCTGGC CTGGAGGCCT CCAAGGGGCA TCTCCTGTGA GCGGAGGGA 43320  
TGGGCAGGAT CTGAGCGGAG AAGAGTAAA GTGGAGGAGT GAGGCCAGAA CAAAGGCTTT 43380  
GCCGTGAAAG AGGTGGTTTC CCGCTGGGC TCAGACCTTC ACTCACTGTG TGGCCAGGC 43440

CAAGGGCAAG CGTCTGACCT CGCTGGGCCT TTGTTTCTCA GGGGTAAGAT GAAACAATGA 43500  
 TGCCCCCAGA CGATGGAGAG GAGGGGTGCC AGGGTTGTGC GCACTTAGTG AGTGGGGGGC 43560  
 AACCTATCCT GCCTCCCCCT CTCCTCATAA CTCCCAAAGG GAAAGCCTGG TAGGCAAACG 43620  
 GAGCGTCTTT GCCATTGCAG GGATGAAGCC ACCGAGGCAG GGAGAAAAGT GCTTTGCCCT 43680  
 5 ACAAGCAACT AAGTCATAGG GCCAGGAGCA AAACCCTGAA AACCTCAGGA GACTTGCCAGA 43740  
 GCCATGAGGC TGGCTCAGCA ACACAAAAGC CAGGGGCAAG CCTCAGCTCT AGCAGTGCGG 43800  
 TGGGAGCACC CAAGGCCAGT CACATCCTAG GGTGGCCTGG AGAGTCCTGA CCCCTGACGT 43860  
 GCAAGCCGGC ATCATCCCCG GGAAGTGTGAG TCTGGTGGGG GTGATGCCCA GGAATGTGAC 43920  
 ATTGTGTGGC CCAGAGGTAC CCTTAAGACT GGAGGATCAC CAGGCGGGCC CTGACCTCAT 43980  
 10 CACAGGAGCC CTTTAAAGC AGTTTCCTTT GCCTGGTTGA AGAAATCGGA GGGATCAAAC 44040  
 CAAAGAAGGT TTTCTGTTGT TGAGATGAGG GGGCCACGTG GCAAGGATCT GAGAACTGCT 44100  
 CCCAGCCAAC AGCCAGCAAG ACAACAAGAC CTTAACTGCA AGGAAGTGAG TTCTGCCAAC 44160  
 AAGAAGAGAA TGGGCTTGA GGCAGGTTTG ACCCCAGGGC CTCCACACAA GAACTGAGCC 44220  
 CAACTGCCCA CTTGGTTTCA GCCTTGGGTT ACTAAGAATT AGGAGGTAAT GAATGAGAGT 44280  
 15 TGTTTTAAGC TGTTGGTTTT GTGGTGATTT GCTATGAAGC CATATCAAAC TAATATACAC 44340  
 ACAGAGGTGT TGGCCCTGG GCCATTCTTA GGAAGCCAGC TCTGCGAAGG AGGAAGAAGG 44400  
 GCAGAGAGGC ACACAGAGCT GCCCACCACA GCAGCTGTGT CCTCCCTGTT GGCCACCACA 44460  
 GTAGCAGTTG GGGATGGTCA GCATCCTTCA GGCAGACTCC AGCCCCGGGT GCTGGAGCTC 44520  
 AGGTGCTAGG GATCAAGAGA AGTAGCCCTC TCTGGGACCT CCAGAGTCTT CTCATGTGGG 44580  
 20 TGGGGTAGGA CCCACCCAGT CAGGCTCAGA GCACCGCAAT GCCTCACACT CATTGTGACT 44640  
 CTGGCCAGGC CCTCTCTGAG CCTCTGTGTC CTCATCTGGA GCACAGGGAC CAGGTGTGTG 44700  
 GAAGCCCGTG GCATAGTGCC AGGAACACAG TAGATGTGCA CAGTGTGCAC TAGCAGGAAC 44760  
 ACACAACAGG GGTACTGACT GTCAGCACCT AGGCAGGCAC ACGCAATGGG GTACTGACTG 44820  
 TCAGCCATAC TGAAGTGCAG CGTGCTAGCA GGCATACACA ACAGCTGTAC TGACAGCACA 44880  
 25 CTAGCAGGCA CATGCCATAG GTGTACTGAC TCTCAGTGCA CTGGCAGGCA CACGCAATAG 44940  
 GAGTAATGAC AGCATGCTGG CAGGCACACA ATAGCTGTAC TGAAGTGTG CCCCATAATA 45000  
 GTGCCAGGTC TTGGAGCAGA TTTTGAAGTC TCACCAAGAT CAAATGCAGA AAGTGCACGA 45060  
 GCATTTCAA GATGTTTTTC ACATGCACAT TAGTGCTAGT TAAAAAATG TTTTGACTGG 45120  
 GTGCACTGGC TCACAAGTGT AATCCCAACA CTTTGGGGGG CCGAGGTGGG CAGATCACCT 45180  
 30 GAGGTCAGGA GTTTGAGACC AGCCTGGCCA ACATGGTGAA ACCCATCTA CCTAAAAAT 45240  
 AAAAAATTA GCCAGGTGTG GTGGCAGGTG CCTGTAATCT CAGCTACTTT GGAGGCTGAA 45300  
 GCAGGAGAAT CACTTGAATC CAGGAGGCAG AGGTTGCACT GAGCCGAGAT CCCACCACTG 45360  
 CACTCCAGCC TGGGCAACAA TATCAAGACT CCACCTCAA AAAAAAATG TTTTTCATAA 45420  
 AGTGTGACTT TTATCAGACC TCTGCATTCT TGAAATTAAC TCTGGCTTGG CTGGGCGTGG 45480



TGGCCACAC CTGTAATCTT AACACTTTGG GAGGCTGAGG TGGGCAGATC ACGAGGTCAG 45540  
 GAGTTCAAGA CCAGCCTGAC CAACATGATG AAACCCCATC TCTACTAAAA ATACAAAAAT 45600  
 TAGCCGGGCG TGGTGGCATG CACCTGTAAT CCCAGCTACT CAGGAGGCTG AGGCAGGAGA 45660  
 ATCGCTTGAA CCCAGGAGGT GGAGGTTGCA GGGAGCCGAG ATCGCACCAC TCTATTCCAG 45720  
 5 CCTGGGGCAG AGAGCAAGAC TCTGTCTCAA AAAAAAAAAA GAAAGAAAGA AATTAACCTCT 45780  
 GGCTCCTAGA AGGAGCCCTA TATCTCAGCA GGACACTCAG TCATTCAACA GACATCTGTC 45840  
 AAGCACCTGC TGTATGCTGG AGCTGTGGGT ACCTCAGCAA TTAGAGGAAG AGGGCAGGGG 45900  
 TACAGGAGTT CCTGACCACC CCAGGCCAGC ACCTCCTAT AGCAGCTGGC AAGGAGCAGA 45960  
 TGACTCAGAC TTCAGCTCAG TCCACAGGAC AGCCTTTTCT GGCCACTGCT CTCAGGAGAT 46020  
 10 GAGATGTGTG GCTGCAAAAG GTAAACTCCT GGCTCCTGAG CAGGCTCTGG GCAATCTGCT 46080  
 CAACGCTCTG TGCCTCACTT TCTACCCAG AAAGTGTGGA CAATGAGAGG ACTTATCTGG 46140  
 CTGGGCGCGG TGGCTCAGC CTGTAATCCC AGCACTTTGG GAGGCCGAGG CGGGTGGATC 46200  
 ACCTGAGGTC AGGAGTTCAA GACCTGCCTG GCCAACACGG TCAAACCTCA TCTCTACTAA 46260  
 AAATATAAAA AATTAGCCGG GCTTAGTGGT GCACACCTGT AATCCAGCT ACTTGAGAGG 46320  
 15 CTGAGGCAGG AGAATCACTT GAACCCAGGA GGTGGAGGTT GCAGTGAGCC AAGATTGTGC 46380  
 CACTGCACTC CAGCCTGGGC AAAAGCCAA AACTCTGTCT CAAAGAAAAA AGAATCATGG 46440  
 CAGAAGGTGA AGTCTATGTT AGTCCCAGTT CCCAGGTCGT ACATGGCGGC AGGAGAAAGA 46500  
 GAGAGAGAAG GGGAACTGC CACTTTTAAA CCATCGGGTC TCCTGAGCAC TCACTGTCTAG 46560  
 AACAGCCTGG AGGAACTGA CCGCATGATC CAACACCTC CCTCCAGGTC CCTCCCTCCA 46620  
 20 CACGTGGGGA TTACAATTG AGGTGAGACT TGGGTGGAGA CACAGAGCCG AACCATATCA 46680  
 GCATGTATGG GGGGCACTGA AACTTGTGCT TGGTGCCCAT TCATTCAACG AGTGTGTGTG 46740  
 GCTGGTCTCC TCATCTTCAA CTCCCTGCCG AGTCTCAGAT AGGCAGCCTG CAGTCTCTTC 46800  
 ACCACAACAG GCACATGGGG CTGGGTGCCA GTGAGTGCTG GGGCTTCTCC GAGCACTATC 46860  
 TCACACCCAG GAGCGTGGGC ACGCATGGCA TTCGCATGTG CCGTCAGTGG ACATTAAACA 46920  
 25 CAGCCATGAA GAAGCCACGA AGAAGTGCTG CCTGCCGGCC GTGCGCGGTC ACGCAGCGCC 46980  
 AACTCCCTCC TGGGGCCTTC TGGGGCCTTC TGGGGCATGG GAGCTGGGGC CGCCTGAGAC 47040  
 AAACATCCGT GACGCTGGGC TGACCCACA GAACGGTGCG GGCCTCGCTC TTGGAGTCAG 47100  
 CCCTGCTGCC AGCCAGTGCC GGGTGCTGGG GACTCAGGGA GGCCCGCCGG GACCACTGCG 47160  
 GGACAGTGAG CCGAGCAGAA GCTGGAACGC AGGAGAGGAA GGAGAGGGGG CGGTCAGGGC 47220  
 30 TCTCAGGAGC CGGGTCTGG GCAAGGCGCA GCCGTTTTC AATTTTCAGG AAAGCGGTG 47280  
 GCTCACACTC GAGCAGTAAA AAGATGCCTC TGGGGAGGAG GCGCGTGCAG CTCTCCGGGC 47340  
 AATGGTGGTG GCTCGGCCTA GAGAGGCGGT AGTGAACGC AGACCCTGGT GGGGGAATGA 47400  
 CATCAAGGGA GGAGACGGGC GGGACCCAG ATTTCTGCCT GTGGGCGATG GAAGTGAGGT 47460  
 TCACTGGCCA GCGGAGCCGG ACACAGAACG CGCAAAACGC CGTGTAGGCC TGGAGGAGCC 47520

GAAGAGCAGG CGGACCCCCT CCGCGGGGGA ACAGTTTCCG CCGGGAGCAC AAAGCAACGG 47580  
 ACCGGAAGTG GGGGGCGGAA GTGCAGTGGG CTCAGCGCCG ACTGCGCGCC TCTGCCCCG 47640  
 AAAACTCTGA GCTGGCTGAC AGCTGGGGAC GGGTGGCGGC CCTCGACTGG AGTCGGTTGA 47700  
 GTTCCTGAGG GACCCCGGTT CTGGAAGGTT CGCCGCGGAG ACAAGTGAGC AGTGAGTCGC 47760  
 5 AGTGACCCTA CAAGTGGTTC TTTTACCCGA GCGGCTCGTA GGCGCGTTGC GGTTTTTCGA 47820  
 AACTACAGCT CCCGGCAGGC CCCAAGCCGC CCTCGGGGCC GCGGGTCGGC GGATTGGCCG 47880  
 CGCTGCATTT TGGGACCTGT AGTTTCCTGC GCTCGTGGCG CTGGCGCCGC GCGGTTGGCT 47940  
 GAGCCCTTGA CCGGGGCTGG AGGGAAGGGC CGACATTCAG TGTGTCCGCG TCTGTCTGT 48000  
 TAGTCCAGT TCCCGGGCGG GATTGAGGCT TAGAGAAGTT GAGTGATTG CTGAGGGCTG 48060  
 10 CACGGGTTGG CATCCCGGCA TGCTCTTTCG CTACTTTGGC TGCATCTGGT TGCCCCACCG 48120  
 GCGGGATGGG GAATGGACTC CAGCCAGCCA GGAGGGCAGA GGGCTGGAGA GGCAGGGCCG 48180  
 GAGGTCAGA CCCTCCGCTC TGACGTTGCG CTTGGTGAGG CCGGGAGGGG TGCCGCTTGC 48240  
 CTCTTCAGCC CTCACGCTCT TGTGGAAGTC GCGGAATTAC TGCAGGCGGA ACTTGACGCA 48300  
 CTGTGGGCGT CTTTCCAGA GAAGGACGGA GTTGTGGGGC GGGAGGATAA GGCAAGGCCC 48360  
 15 AGCCACTTCG CATCTTCGCC CCGCCAGCTC CTCGAGATGG GATATACCAG GGTTGTCTC 48420  
 CAACCCTCTC CGCAGGAGGG ACTGATGGAA ACGCCTGGGA AAGTAGCCCG GTACCCACAA 48480  
 AGGCTGTCTA CAAACAGAGT CTTACTGTCT TCCCAGGTC TGTGCCATAG GGATTCTCGA 48540  
 AGAGAACAGC GTTGTGTCCC AGTGCACATG CTCGCATCGC TTACCAGGAG TGCCCCGAGC 48600  
 CCTAAGATGT TCGGAGTGGT TTTTTCGCAC AGACCCGAAT AGCCTGCCCC TCAGCCACGC 48660  
 20 TCTGTGCCCT TCTGAGAACA GGCTGATATG CCCAAGATAG TCCTGAATGG TGTGACCGTA 48720  
 GACTTCCCTT TCCAGCCCTA CAAATGCCAA CAGGAGTACA TGACCAAGGT CCTGGAATGT 48780  
 CTGCAGCAGG TAGAGCACAG GCCCCGAGGA AAGGACTGCG GGTGGGTGGA GCTTCAGCCA 48840  
 GGACGGGGTG TGCTTCCCTC TCCCGGCCCA TTCCAGCCAG GCCCCTCCGG GCCAGAGGCA 48900  
 GCGTCTGTCA TAAAAAGGGC TGGTGTTCCT GGTGGGGTCA GAGAGAGGAT TGACAAGTAA 48960  
 25 AAACGATCGT CCTTTGAAGG GGGCCGGCCC CTCCACACCT GTGGGTATTT CTCATCAGGC 49020  
 GGGACGAGAG ACTGAGAAAA TGAATAAGAC ACAGAGACAA AGTATAGAGA GAAAAGTGGG 49080  
 CCCAGGGGAC CGGCGCTCAG CATAAGAGG ACCTGCACCG GCACCACTCT CTGAGTTTCC 49140  
 TCAGTATTCA TTAATTACTA TTTTACTAT CTCAGCAAGA GGAATGCGGC AGGACAGCAA 49200  
 GGTGATAGTG GGGAGAAGGT CAGCAAGAAA ACGTGAGCAA AGGAATCTGG GTCACAAATA 49260  
 30 AGTTCAAGGG AAGGTACTAT GCCTGGATGT GCACGTAGGC TAGTTTTATG CTTTTCTCCA 49320  
 CCCAAACATC TCGGTGGAGT AAAGAGTAAC AGAGCAGCAT TGCTGCCAAT ATGTCTCGCC 49380  
 TCCTGCCACA GGGCGGCTTT TCTCCTATCT CAGAATTGAA CAAATGTACA ATCGGGTTTT 49440  
 ATACCGAAAC ATTCAGTTCC CAGGGGCAGG CAGGAGACAG TGGCCTTCCT CTATCTCGAC 49500  
 TGCAAGAGGC TTTCTCTTT TACTAATCCT CAGCACAGAC CCTTCACGGG TGTTGGGCTG 49560

GGGGACTGTC AGGTCTTTCC CATCCCACGA GGCCATATTT CAGACTATCA CATGGAGAGA 49620  
 AACCTTGGGC AATACCCGGC TTTCCAGGGC AGAGGTCCCT GCGGCTTTCC GCAGTGCATC 49680  
 GTGCCCCCTGG TTTATCGAGA CTGGAGAATG GCGATGACTT TTACCAAGCA TACTGCCTGT 49740  
 AAACATATTG TTAACAAGGC ATGTTCTGCA CAGCTCTAGA TCCCTTAAAC CTTGATTCCA 49800  
 5 TACAACACAT GTTCTGTGA GCTCAAGGCT GGGGCAAAGT TACAGATTAA CAGCATCTTA 49860  
 GGGCAAAGCA ATTGTTCAAG GTACAGGTCA AAATGGAGTG TGTATGTCT TCCCTTTCTA 49920  
 CATAGACACA GTAACAGTCT GATCTCTCTT TTCCCTACAG TCCTTGAGGG TGACAGACTT 49980  
 AGGAGTGCCT TGGGGGCTC TCTGAGGAGC AGCTGATATT CACGGGTCAG GAGGAAGCAT 50040  
 TTCCATTAGA GGGGCAGCCG GTGGCCAGCC TCACTTGGAA GGTCTTTGAA CCTCGGGGGT 50100  
 10 GCAGGGAGGT GGCAGTGGTG CAGGTTGCCT TCTCCTGGGT TCCTTGAGGT GCCCTCTTGT 50160  
 ACCCGGCTCA CACCCTTCCC CTCCCCGAGT TTCCTGCTCA GGTTCCCGTC TGAGAGCTTG 50220  
 TATGTAGGAC GTCAGATAGG ACAGCATAAA TGTTTGGATC CAGAAACGCA GAACAGTTTC 50280  
 CTATTTTGAG ACTTGACACC TAATTAGTCA TCTTACTATT TAAGCTGAAA AATAGTGTCTG 50340  
 TGTMTTGGGT AACGTTCTGC AAATCGTTTG CTAATGGCGG CTGAGTTGCT TCACGCCCTT 50400  
 15 TAGGGCAAGA GTGGGACTTG CCTGTGGACT TCTCCGCGGT CCCACAGGGC TCTCGCCACC 50460  
 TGGCAGTGGC CTCTGCATCT GCAAAGAGCT GCCCCTGGC TGCCGAAGCT TGTCTCAGGG 50520  
 CAGCTTGTGT GGCCTCGCCT CTTCTGGCT TCCCCGTAAC CCTTGCTCCG AACTCCGTTT 50580  
 AGAAGGTGAA TGGCATCCTG GAGAGCCCTA CGGGTACAGG GAAGACGCTG TGCCTGCTGT 50640  
 GCACCACGCT GGCCTGGCGA GAACACCTCC GAGACGGCAT CTCTGCCCCG AAGATTGCCG 50700  
 20 AGAGGGCGCA AGGAGAGCTT TTCCCGGATC GGGCCTTGTC ATCCTGGGGC AACGCTGCTG 50760  
 CTGCTGCTGG AGACCCATA GGTGACCTA GTTCCCAGGC CTCTCCTGGC CTCCTGTGGG 50820  
 GATGGTTGGC AAGGGATGGC GCTGAGGGTG GGGTGGGCCC ATGGGGACTC CTGCCGTCTC 50880  
 TCAAGCAGAA CTCAAGGAGA ATTTTTTAGC TGCTGTATAA TTTCTCGCCA TCGTGGGTGT 50940  
 AAACCTAGGG TTGGGCTTTT TTGCTGAATT AGGGCACGGC AGATGCCAC TTCACCCATT 51000  
 25 TTTGATAAAC CAGTATCTGG GGTGTCAGAT TCTTGGCTGT CTGCAGGGCC GAGTTAGCCG 51060  
 AATGCCACCT GCCTTTGATA CGTGAGAACG TTGTCTGAGA ACCGTGACTT CTGTGCTTGC 51120  
 TTGTGTCTGG TCAGCTTGCT ACACGGACAT CCCAAAGATT ATTTACGCCT CCAGGACCCA 51180  
 CTCGCAACTC ACACAGGTCA TCAACGAGCT TCGGAACACC TCCTACCGGT GGGTCAGACG 51240  
 AGTTTACACC TGTCTCGGGG TCCTCAAGAG AACCAGCTTG GCATGGTGCT GAGTCCACAG 51300  
 30 CCCCATGCTG TGCTGTGGTG GAGGGTGGTG GTCTTTCTAG ACGCTCCCCC GAAGTGTGCA 51360  
 GAGCGTGGT GCCCAGGGGT GGGGTGCGGC CTGGGCTGCC TCCAATGCCC ATTACTGTG 51420  
 AGGAAGCAGC TTTGCATCTG TGTGCTGACC TTGGCGGGC GTCCTGAGCT CCTCGCAGGT 51480  
 GCTGTTGTAG CAGCTGTGCA GTAGGTCAGG GCTGGCCCCC AGTGCAGCTT TGCACATGAA 51540  
 GTAGGAGGAG GCCCTGCTGC TTGTGAGAGC CCAGCAGAGT CTTGGTGTTC TGTGGGGTTC 51600

	CTGTGGCCGG	ACCAGTGGCA	GGGTGCTGTG	GAAGCTGTCT	AATCTCCTCC	CTCTGTCCAG	51660
	TACCCCCGCT	CGTCTTCTAG	CTCCCTCCTA	CGCCCCGGCC	ACGTTTCAGT	TATGCTCACT	51720
	TCCTCTGACC	GCCGAGGCTC	CTGCGTGTCT	CCATACAGCT	CACGCTGCAG	GGCCACGCTG	51780
	TGGGTGTTGG	AGACAGCTCC	TCCTCGACCC	ACGGTGCTCT	CTCCCACCAG	GCCTAAGGTG	51840
5	TGTGTGCTGG	GCTCCCCGGA	GCAGCTGTGC	ATCCATCCTG	AGGTGAAGAA	ACAAGAGAGT	51900
	AACCATCTAC	AGGTAGGCTC	CTGGGCTCCC	GCTCCGGCTC	AGTGTCCGAC	AGGCGAGTGC	51960
	TGCTGGGTGT	CCAGAGCCCC	AGGCTGCGCT	CCCCTGGGCT	TAGGGTTTGA	AGTTCAGTGG	52020
	GGGACTGCAG	GGGAGGACCT	GGTGGGGGTG	GGGACTGGCT	TCGGTCCTTT	CTTGCCCGTG	52080
	CTTCAGCTGC	GCACTCTGCC	CTTCCTCCCA	CAGATCCACT	TGTGCCGTAA	GAAGGTGGCA	52140
10	AGTCGCTCCT	GTCATTTCTA	CAACAACGTA	GAAGGTACAA	GCAGCTGGGT	GGGACCAGGG	52200
	TCGGGTGGA	GTGTGTGCAG	CCTCTCAGGG	TGGAGCTCAG	TGGTGTCA	GCCTGGTTGT	52260
	GCTTGCCCGG	TGGGGCGGCC	AGTGCGGCCA	TGTACCTGGG	CCCTGTCTTC	TGACTCGGGG	52320
	CCACCCATGT	TAGACTTCTG	TGTGGAAGAG	CTCACACAGT	GGTCTGAGAC	AGCCAGCCGG	52380
	CAAGACTGCC	TCTGGCTGGT	GCCTGGGGCC	TTGGATTTTG	GGAAGGCTCC	CTCCATTTCC	52440
15	TGATGAGAGG	GTCTCCCTGC	ACCTAACCTG	CTGGTGCAAA	CAGTAGGGGT	TTTGCTGAAC	52500
	ACCGGCTTTC	TCTTCGGGGA	CTTTGTTGCT	TGCCCAGCAG	CAGGTGCTCC	AGTGACCGGC	52560
	CCTCATACCA	TCTTGGGAGG	GTGTCTTGGA	AGCCGTGTCT	GGCCTCCCGC	GACCCTGCCC	52620
	CGTGTGTCTT	TTTCTGTGTC	TGACCTTGCT	GCGGAAAATT	ATGGCCCTGA	GTGTGACTCC	52680
	AGGCTGAGTC	CTGTGGGTCC	AACACGGGAT	GCCTTGGGGC	CTCTTCTGGA	GACGGGATGT	52740
20	GAGTGACAGG	AGCCGGCCGG	GGCAGCTTGC	CCTGTGACTG	CACGTGGCCA	CAGCCTGTGA	52800
	GGGCGGGGGG	TGCTTCTCCA	CCACGTGGC	TGCCCCTCGG	GTATGTCAAG	GGCTTCTGGG	52860
	GCTCATCAGG	GGGTCCTAGA	GACAGTGGCA	GGGTGCACCC	CCGTTGGCTG	CCCTTACAGT	52920
	TTCTGTGACC	TGAGGGTGGC	ATCTGTGCAG	TCGGCGCGGT	CTGTGCTTCT	GTGGGATCAG	52980
	GGTTCCCTCT	GTTTCCTGCC	TCAGTTGGGG	CTCAAGCCTC	AGGTGAGGTG	GCCCCGGAGC	53040
25	ACTCAGAAGG	CATCGGCGGT	CCTGTGGGCT	GCTTCTTGCA	CTCACGTTTG	CTGAGTGCTC	53100
	AGTGTGCCAG	GACTGAGGAC	CCTGAAGCTG	CTCTTGTATT	TAGGGCGGCG	CTCCCCCTGGC	53160
	AGAGACTGAG	CCAGGTGGTC	CCGCATGACC	CACTACCAGG	CGTTTCTGGG	CCCTGGCCCT	53220
	TGGAGGGACA	GGGTGGGCGG	AACATGGGCC	TGCAGGGAGG	CTCCCGCTTA	CTGGAGGCAT	53280
	GTGCTGTGTT	GCTGGAGACA	TCCTCTGTGT	TGCTTCTTGT	TCGCTGTGGT	TTTGGGTCTG	53340
30	GTGGCACCAA	GGACCCTCAG	TCATCTTGAT	GTGTGGTTGT	CCAGGCCCTT	TTGTTGGTCC	53400
	TAAGAAGGGG	CTCTGCCCTT	GTGCCCCCAG	GTTCCCTGAC	AGGAGCTGCC	GGCTCGTCCC	53460
	GGTGATGCCT	GCAGGACGTG	ACTCTGGGAC	GGGGGGTTGG	GCAGATGTGC	TGATGGAAAT	53520
	TCTCAAGCAG	GCGTCATTTT	CGAGGTCCCT	ACCTGGATTT	CCAGGACAGG	AGTGCCTGCT	53580
	GGGTGTCCCC	AGTCCCATGC	AGCGGGGGTC	CTTGGGATAG	CATGGAACGC	TGAGCATGGG	53640

CCTGGCCGGC CGTGGTCCTG GACAAGGGCA GTGCCCCGGT GGCTGCTGGG CCTGGGACCT 53700  
 GGTGGGGACG CTGGGCCTGG TACCTGGTGG GGATGCTGGG CCTGGGACCT GGTGGGGAGG 53760  
 CCTCTGACTG CCTCCTGGTG CTGCTTCCGT CTGTGTTAGG CCTCTGGGTA TTGGGGCCCC 53820  
 CATCTGTCTC CTCCTCCAGG CCTGTGGACT CAGACCAGGA AGACACAGGC CAGCCCCTGC 53880  
 5 CTGTCCCCCT TGGCTTGGGC TCTCACTGCC CGACCTGGCG GGAGGTTGCC TAGCCGTGAA 53940  
 CCTTCGCACC CTGTCTGCCA CCGGACAGGC TGTGAGGGGG TGTCTGCAGC ACCTGCACCG 54000  
 GCCTGAGCAT CTTCAGAGTG GGCTGCAGCT CCTGGAGGGG TCTGAGAGGA AGGGAGGCAG 54060  
 GTATTTTGGG CGAATGAGGA GACAGCTGGA GAGCTGGCAC CCTTCCTGGC CTGCGTCTCTG 54120  
 TGAGGACTCT GGTGGGGGAC AGCAAGCTTG GGGTCAGCCT GGGGCAGAGC CTCTGGGACG 54180  
 10 GCCCCGCCCT TCGTGCCCCCT TCCCCCGCA GCTCCTGTCC TCGCCCCGCC CTCAGCTCTC 54240  
 CGCCAGGCAA GGTTCGGCAA GTGCCCTGT GCGGCAGTGC CTGCTGATTG GCTGGTCTGT 54300  
 TGCTATGGTG CTGCCCAGGG GTGTGCTTTT CCTCCCCTGC CTTCCCTGCT ATCCCTGGGA 54360  
 GTATCTGGGG TTGGGTCATC GCTGGTGTGT GTGAGTGTGT GTGTGTGTGT ATGTGCACGT 54420  
 GTGCATATGT GTGCGCTTCT GGCTCTGCA GCTGAGTCCT GGCCCTCGGG GGGCCTGGCA 54480  
 15 CCTCCTGGGG ACAGGCACAA AGCAGCCATG ATGGAGTCGG GAGCTGGGGG AGGCCCCATT 54540  
 GCCCCACGTG GCTGCCCTGT GACTCTGGGG TGCTTGTTAG AAGAGGTATC TGGTTCTGTC 54600  
 TGTGTTTAAG CAACTCCCTA AGGAATTCTT GTGGTTCCAG TTTGGGGGGC CTGTACTGTA 54660  
 GAGGCAAGGG AGGGGCAGGA CATCCCCCAG ACTCTGACTT CTGAAGCCTT TTCTGCCCCG 54720  
 GGCTCTCCG CCAGTACAGG CAGTGTCTT TGCCAGGGCT GCCATGCTGC AGAGGGGAGT 54780  
 20 GGGCCACTGT TTAGCCCAGG AAAACCTGGC TCTCCCTTAG CTGGAAGTTC TGGGCCTGTT 54840  
 GTGGTTGGCA GGAAGCTGA GTGACGGTGC TAATCACAGG GGCACCTGCA GGGGTTTGTG 54900  
 GGAGATGCCT CTGTGGGTTG GGGCGATAGG CTGAGGGGCT GTTCTTCCCT GCCCTGAGGA 54960  
 GGGCTGAGTG TAGCCGCCAC TCCTGTCTTG TCTTGGGCTG TCTCGGAGAG GATGCGTAGA 55020  
 ACCCTCGGGA TCCTGCTGGC CTCCGTCTGG TCCACCCTGA ACCTCAGGCC TTCTGGGGGC 55080  
 25 AGAGGAGGAT TCCCTCAGGA TCACTCGGGT GGGGGCCTCT CTTGGGCACC TGAGACCCTC 55140  
 AGTGGGTGCT TTGTGGCGCG TTCACGGTTG GTGGGGGACG CCCAGCCCTG CCCGCCGTGT 55200  
 AGGAGCCGTT CTGTCTGGG CATCCCCCTG TGGTCTGGGA CTTAGTGGAC CCTGAGGGTG 55260  
 TGTGTTTACC CCTGCCTCAC ACCTGCAGAA AAAAGCCTGG AGCAGGAGCT GGCCAGCCCC 55320  
 ATCCTGGACA TTGAGGACTT GGTCAAGAGC GGAAGCAAGC ACAGGTGAGA CCCCTCAGTG 55380  
 30 AGGCCACGAC CACTGTCTT CCATGGCCCA GCTCTCCTGT GACCTGTGGA GGCCCGGATA 55440  
 TATTTCTTCA CTTTTCTTTG TTCCTTTTTA AATTATGAAA CTAACCACCA TTCAGTACGA 55500  
 AAAAGTTTAA GCAGCTCTGA GGAAGATAGA GTAAAAAATT GTCTCCCTCT TCCCTGGCCC 55560  
 TCAGCCATCC CCGGTGGCCA CCGTGGAGTG TGGACGGAGC CCTGCAGGCC TGTGTCTGTG 55620  
 CGGAAGCACG CGCAGTTTGT TCTGCACAGA CTGTCTGCA GTTGGCTGTT TTTACTCAGC 55680

GTTGTGGGTA TAGCTTCCCA TGCTGGTGCT GGCAGCTCGG CCTTGTTCTT TTGAGGACAG 55740  
 CAGATGTCTC CTATGTCTAC CTCTTACAGC TTCAGAGATT CAAGTTATAA TAAAGCTCTT 55800  
 CTTATATTGA GGGGGAAACC TCCCTCCCCC TTTTNTTTGA AACAGGGTCT CGCTCTGCTA 55860  
 CCCAGGCTGC AGTGCAGTGT CACAGTCTTG GCTCACTGCA GCCTCAGCCT CCCAGGCTCA 55920  
 5 AGCGATTTTC CCACCTCAGC CTCCCAAGTA GCCGGGACTG CAGGCACGCA CCACCATGCC 55980  
 TGGTTAATTT TTGTATTTTT TGTACAGACA GGGTCTCACT CTGTTGCTCA GGCCAGTCTC 56040  
 CTGAGCTCGA GAGTTCCACC TGCCTTGGCC TCCCAAAGTG CTGGGATTAC AGGCGTGAGA 56100  
 CCCCATGCCT GGCCAGCTCT TTTTTTTTTT TTTTTTTTTT TTGAGACGGA GTCTCGCTCT 56160  
 GTCGCCAGG CTGGAGTGCA GTGGTGCGAT CTCGGCTCAC TGCAAGCTCC GCCTCCCGAG 56220  
 10 TTCACGCCAT TCTCCTGCCT CAGCCTCCCG AGTAGCTGGG ACTACAGGTG CCCGCCACCA 56280  
 CGTCTGGCTA ATTTTCTGTA TTTTATAGTAG AGACGGGGTT TCACCGTGTT AGCCAGGATG 56340  
 GTCTCGATCT TCTGACCTTG TGATCCGCCC ACCTCGGCCT CCCAAAGTGC TGGGATTACA 56400  
 GGAGTGAGCC ACCGCGCCCG GCCCAGCTCT GCTTTTTCTT AGTGGTTCTG CGTTGTGTTT 56460  
 GTTCTATCC AGGAATAGGG TTGGTTTTAC TTTTCCATCG AGTTTTTAAA GAGACGACGA 56520  
 15 TTTACATGGT CGGAAACTCA CGAGGACTCC CCATCCCTTG GTCGGAAACT CACATGGACT 56580  
 CCCCATCCCT TGGTCAGAAA CTCACGTGGA CTCCCATCCA TCCCAGGCAG CAGCTTCCCA 56640  
 CCTGGGCCCT ACGTGCAGGA TGAGGGCTCC TTCCGGGTCA GAAGACATGG CGGCCTCGGG 56700  
 GCACCGTCCC CTGCATGGGG TGCTCACAGG ATCTTCTCCT CTCTCCTTCC CAGGGTGTGC 56760  
 CCTTACTACC TGTCCCGGAA CCTGAAGCAG CAAGCCGACA TCATATTCAT GCCGTACAAT 56820  
 20 TACTTGTTGG ATGCCAAGGT GGGGGCTCAG TCCTGTAGCT GACGACTCCT GATGTCCAGG 56880  
 GGTGTCCCTG GGCTTGGGAA CAGCTGTCCG AGCCTTTGCT GCTTCAGGGC CTTAGATCAG 56940  
 CAGGCCTGGG TGGGAGGACT CACCTCTGTC ACTGGGCAGG GGCTCAACCT GGCCAGACAC 57000  
 ACTTGTGAGC AGCCCCAGGC CACAGGTCAG TTTTCTGAGC AGTCTGGGAG CGGGCAGGCT 57060  
 GGTGGGAGTG AGGAGAGACC TCCAGGCTGT GGTCCATAGG CCAGTGCCCG CTCTTGATCC 57120  
 25 TGACAGCTCA GGTTCCTCTCC TTCACGTCAG GCCATGGGAG GCACCGAGAA CACAGGAAGC 57180  
 CCACTGACTC CCCTCTTCCC AGCGCGTGCC CGGCCCCACA CTCACTCCCC CTCCCAGCAT 57240  
 GTGCCCCGCT TCACACTCAC TCCCCTCTTC CCAGTGCATG CCCGGCCCCA CACTCACTCC 57300  
 CCCACAGCA TGTGCCCGGC CTGACACTCA CTCCCCTCCT CCCAGTGTGT GCCCAGCCCC 57360  
 ACTCCCTTCC GCCCCGTGTG CCCAGCCCCA CGCTCACTCC CCCC GCCCAGC 57420  
 30 CCCACACTC AACTCCCCTC CTCCCAGTGT GTGCCCGGCC CTGCTGCCCT CCTCCCCATG 57480  
 TGCCCTGCTT TTGTGCCCA CACTTTTTAC TTAGTGACAG TGGGATCACA CGCCACGGGT 57540  
 CAATGGTTTG TGTGTTACAG TGACGATGGC GTGGTGACGT TTCCAGATCC CGTCGTTGGT 57600  
 TCGCTCATTC TCGGGGTGTA TATTTATTGA GAGCTCATCA TGCTGGGTGC TATTCAGGC 57660  
 ATAGCAAGAC TGGCTTCACT CACATGGAGC TTTGATTCTA GTGGTGGGA CAGGTGGACA 57720

GCAAAAGAGT AAGCACGTGA GCTGACGATA CTGAAGGGAA ATAGAGCAGA GGGAGGAGGC 57780  
 GGAGACCGAG CCAAGCGGGC CCAAGTGCGA TGTGCGCGGG AGGTGGGGAA TGCTGGTGGG 57840  
 TCTGAGGGGA GCCTCAGCAG GTGCAGCAGA GCAAGGGAAG AGGTGAGTGG GGGCGGCTGG 57900  
 GGGGCCGACT CCTGGGAAGC TGTAGCAGAA CCCCACAGAG AGCTGGTGAG GTTTGCCGTG 57960  
 5 GTTGTGGGTG ACTCGGTGCT TTGAGCCCTG GCTGCCCCCTG GGAACCATCT GGAGAGCTTC 58020  
 TAACCCAAACC AGGCCCTCC CTGGGACAGT TATATCACAG CTGGTAAGCC GAGTCTAACA 58080  
 CTTTCACGGA AACGCAGAAG ATCTAAAACA GCAAGATGAC CGTGAAGAAG AACAGAGCTG 58140  
 GAGGACTCAC CTCGCTGGTT TCAAGACTCC TCTAAAGCTG CAGGAGTGA GGTGGAGATG 58200  
 GCCCAGCTCA GGCACAGGCC TGCAGGCCAT GGAGAAGGCA GCAAGCTCAA GCTGACCCAC 58260  
 10 ACGCATGTGG TCATTGTTTT TTTTTTCAGT TGAATCTCA CTCTGTCACC CAGGTTGGAG 58320  
 TGCAGTGGCA CCATCTCGGC TCACTGCAGC CCCC GCCCT AGGTCTTAGC GATTCTCCCA 58380  
 CATCAGCCTC CCGAGTAGCT GGGATTACAG GCGTGCCCA CCATGCCTGG CCCTTGGTGA 58440  
 TTGTTTTTTG ACAAACATGC CAATTTAATT GAGAGAGGAA ATGAAGGTTG ATTTCTGGTT 58500  
 TTCTGAAAAA ATGGTGCTAA GAACAGCTGG ATATCTGTTC GGAAAACAGT GAATCTTAAC 58560  
 15 TCTGTTTTAA CCCTGTATAA ACCTAAATGT AAAAGCTAAA CTAAAAGTTA TAGAAAGGAA 58620  
 CATGGGGGAG GTCITTGCAA CTTTGGGGTA GGCAGAGATT TCTTAGTATG GATACACAAG 58680  
 GCACTAGCCA TGAAGAAAAA CATTAAATTT TAGACTTCAC CAAAATTTAA AGCTTCAACT 58740  
 CTGTGGAAGA GTTGAGAAAA TGAAAAAGCA GTTAAAGAAA GGGAGAAAAAT ACTTCTTTCA 58800  
 AAGGACTTAA AAAATTTTTT CAGCCCTCCT CTGATTTGAA AGGACCTTTG ACCAGAGTAT 58860  
 20 GTAAAATTCT CCCATACTA AGCAAACAAC CCACTTAACC ACTGGGAAGG GATCTGGACA 58920  
 GACGTTTCAC CAAGATGGGT GGAATGGCCA GTTAACCACT GGGAGAGCAT CCGGACAGAC 58980  
 GTTTCGCCAA GATGGGTGGA ATGGCCAGTT AACCCTGGG AGAGCATCCG GACAGACGTT 59040  
 TCGCCAAGAT GGGTGAATG GCCAGTTAAC CACTGGGAGA GCATCCGGAC AGACGTTTCG 59100  
 CCAAGATGGG TGAATGGCC AGTTAACCAC TGGGAGAGCA TCCGGACAGA CGTTTCGCCA 59160  
 25 AGATGGGTGG AATGGCCAGT TAACCACTGG GAGAGCATCC GGACAGACGT TTCGCCAAGA 59220  
 TGGGTGGAAT GGCCAGTTAA CCACTGGGAG AGCATCCGGA CAGACGTTTC GCCAAGATGG 59280  
 GTGGAATGGC CAGTTAACCA CTGGGAGAGC ATCCGGACAG ACGTTTCGCC AAGATGGGTG 59340  
 GAATGGCCAG TTAACCACTG GGAGAGCATC CGGACAGACG TTTCGCCAAG ATGGGTGGAA 59400  
 TGGCCAGTTA ACCACTGGGA GAGCATCCGG ACAGACGTTT CGCCAAGATG GGTGGAATGG 59460  
 30 CCAGTTAACC ACTGGGAGAG CATCCGGACA GACGTTTCGC CAAGATGGGT GGAATGGCCA 59520  
 GTTAACCACT GGGAGAGCAT CCGGACAGAC GTTTCACCAA GGTGGATGGA ATGACCAGTT 59580  
 GAGCACATGG AAAGTCGCCC AGCATCTCCA GTCATAGGAG AAGGCAGATT AAAGCCACGG 59640  
 GGAGCCGACA CTGTGGTCCC ACTGGCATGG CTGAAATTCA GAAGCCCTGA GTGTGGCATG 59700  
 AGGATGTGGA ACAGCTGGAT CTCATCCATC GCTGTGAAGT TGTGTAGCCA CTCCACAAAC 59760

GTGTGGCAAA CAGCCGAGCC GGGAGAAGGG AAGACGTGTT CAAAGATTCA TATGTGGCCA 59820  
 GGCTCAGTGG CTCACGCCCTG TAATCCCAGA ACTTTAGGGG CCAAGGCTGG GGGATCGCTT 59880  
 AAGCCCAGGA GTTTGAGACC AGCCTAGGCA ACATAGGGAG ACCCCATCTC AAAAAAAAAA 59940  
 AAAAAGAAAA AAGAAAAGAC TTCAGTGTGC AGGTTTACCA GAGTTTGTGTT TGCAGTTGCC 60000  
 5 AAAACTGGGA AGCAGCCCGC GTGAGCCCAT CCACAGGTGA ATGGACAGAC CGTGGTACCC 60060  
 GAACACTAAC AGCAGCCACG GGCCTGGACT GTGGTCACAC AGCAGCAGGG AGCCGATGAG 60120  
 TCTCGGACAT GCTAACCCAG AGAGGCCCAT TGAGGAGGAC CTACTGTTTT TTGTGTTTTT 60180  
 GTTTTTTGTT TTGAAATGGA GTCTCGCTCT GTGGTGCAGG CTGGAGTGCA GTGGTGTGGT 60240  
 CTTGGCTCAC TGCAGCTTCC GCCTCTTGGG TTCAAACAGT TCTCCTGCCT CAGCCTTCCG 60300  
 10 AGTAGCTGGG ACTACAGGCA CCCGCCACCA CACCCGGCTA ATTTTGTAT TTTCAGTAGA 60360  
 GACGGCAGTT CGCCATGTTG GCCAGGCTGG TCCCAAATC CTGACCTTGT CATCCACTCA 60420  
 CTTTGGCCTC CCAAAGTGCT GAGGTTGCAG GCATGAACCA CCGCACCCGG CTGGACCTAC 60480  
 TGTTTTATTC CATTTATGTG ACACTCTATT AATAGAAAAG GCAGGGGTGG GGCTGGTGGT 60540  
 TATATGGTGC ACATAACTGC CAGAACTCAG TACACTTAAA ATGAACATCT TAATGTGTGA 60600  
 15 AATTTTTTTT TTTGAGACGG GGTCTTGCTC TGTACCCAG GCTAGAGTGC AGTGGTGCGA 60660  
 TCTCCACTCA CTGCAAGCTC TGCTCCTGG GTTCACGCCA TTCTCCTGCC TCAGCCTCCC 60720  
 GAGTAGCTGG GACTACAGGC GCCCGCCACC ACGCCTGGCT AATTTTTTTT TTTTTTTTGT 60780  
 ATTTTATAGTA GAGACGGGGT TTCACAGTGT TCGCCAGGCT GGTCTCGATC TCCTGACCTC 60840  
 GTGATCCGCC TGCCTCGGCC TCCGAAAGTG CTGGGCTTGC AGGCGTGAGC CACCATGCCC 60900  
 20 GGCCAATGTG TGAAAATTTA AAAGTACCAA AGCTGGACCC CACCCAGAT TGCTCCCATG 60960  
 ACACTCTGTG GGTGGGACCT GGGAGTTGGG TTTTGTTTTG TTTTGTTTTG TTTTGTAGAT 61020  
 GAAGTCTCAC TCTGTGCCT AGGCTGGAGT GCAGTGACAC AATCTCGGCT CACATTAACC 61080  
 TCTGCCTCCC AGATGAAAGC GATTCTCCTG CCTCAGCCTT CTGAGTAGCT GGGATTACAG 61140  
 GCACACACCA CCACCCCTG CTAATTTTTG TATTTTATAGT AGAGACGGGG TTTTACCATG 61200  
 25 TTGGCCAGGC TGGTCTTGAA CTCCTGACCT CGTGATCCGC CCGCCTCGGC CTCCCAAAGT 61260  
 GCTGGGATTA CAGGCGTGAG CCACCGCGCC TGGCTGGGAG TTGGGTTTGT AAATCTCCCT 61320  
 GAGTGGGGCT GGGCAGGGA ACTGCTGGGT CTGGGTCTTC CTGGCTCCTC TGGTCTGTGG 61380  
 CTTCTGACT GCGGTGGCCG GGGGCTCCCA GGGCATCGTG GCCGTCTGTC TTGCTGAGCG 61440  
 TGGCAGTGC CTTTCCATGC TGTGGAGGAG CGTCTCCCG TATGGCGAAC TGCTGGTTAG 61500  
 30 GGTGGGGCGG TGTTGCCAGG TCATCCAGGT CTGGCCTCTG CTCTCGACAT CGCCGGCGCT 61560  
 GTTGCTCATC TGCCTTGTG ATGTTGATG CCTGCTGCAC ATGTCTTGGC TTCCCTCTTT 61620  
 CCCGGCTCT GTGAGCTCCA GCGCTGCGTC CCTTCTCTC CTCCTGTAGA GCCGAGAGC 61680  
 ACACAACATT GACCTGAAGG GGACAGTCGT GATCTTTGAC GAAGCTCACA ACGTGGTGAG 61740  
 TCTCCGCTGG CCTCCTAAAC ACCTCTATT GCTTCTGGCC TTTTGTCAA GAGCCACGCA 61800



AACCTTTCTG GAGGGGCTCT GGCCAAACTC CTGAAGCCCT AGGTGCCCAG GACTGGGGAC 61860  
 TGAGCACACC AGGAGCTTCT GCCACCCCTT CCCGCCCTGA TCCGATGCCT CTGCTGGGGC 61920  
 TGGAGACTGG CCAGCTGGGC CAGGGACCTG CCCGTCAGGC GCAGGGCCCC CACAGGCCGC 61980  
 TCACCAGACC CTTTCCCTCC AGCCAGCTCG GGGTCAGCCT GGGCCAGGGC TGTCTCCTCT 62040  
 5 GCCCTCGGCA GCAGCAGGCT TGTGGTCTTG CCTGCAGTGT CTCTGCCCTT CCGGCCACAT 62100  
 GGCTTGAGAC TGAGGCAGGA GAATCGCTTG AACCTTGGAG GCAGAGGCTG CAGTGAGCCA 62160  
 GGATCACACC ACTGCATTCC AGCCTGGGTG ACAAAGCGGG ATTCTGTGTC AAAAAAAAAA 62220  
 ATGTTGACTG GCGCGCTAG CTCATGCCTA TAATCCCAGC ACTTTGGGAG GCTGAGGTGG 62280  
 GCGGATCAGC AGGTCAAGAG ATCAAGACCA TCCTGGCCAA CATAGTGAAA CACCGTCTCT 62340  
 10 ACTAAAAATA CAAAAAATT AGCTGGGCGT GGTGGCGTGT GCCTATAGTC CCAGCTACTC 62400  
 AGGAGGCTGA GGCAGGAGAA TCACTCGAAC CCAGGAGGTA GAGGTTGCAA TGAGCCAAGA 62460  
 TCACACCACT GTACTCCAGC CTGGTGACAG AGCAAGACTC CGTCTCAAAA AAAATAAAAT 62520  
 CAAAAAGAAT AATTGGCAAT TCCAGTGAAA TAATTGTTTG TTTGTTTGTT GAGACAGGGT 62580  
 CTCCTTCTGT CGTCCAGGCT GGAGTTCAGT GGTATGATCT TGGCCCACTG CAACCTCCAC 62640  
 15 CTCCTGGGCT CAAGCCATCC TCCCACCTCA GCCTCCCGAG TAGCCGGGAC TACAGGTGCA 62700  
 CACCACCACG CCCGGCTAAT TTTTGTATTT TTTGTAGAGG CGGGGTTTCC CAGCGTTGCC 62760  
 CAGGCTGGTC TTGAACCCCT GAGCTCAAGT GATCTGCCCCA CCTTGGCCTC CCAAAGTGCT 62820  
 GGGATTACAG GTGTGAGCCA CCGCGCCCGG CCTGAAACAA TCGTTTCTAA ATATTGGTGT 62880  
 GGGCCACACA GTCATGTTTG GACCTACTTG TGGCCTTTTA CAGACCCAG GCCAAGGCTT 62940  
 20 TGGGAACTTG GCTGTGAGCC TCCTGTGCCT TCTGCACCCC CACCCCATTT CTGCTTCTG 63000  
 GAACCCCGA TCCTGTCTGT TTCTGTGGTG ATTGGGTGT GCTTGGGCTC TAGGAGAAGA 63060  
 TGTGTGAAGA ATCGGCATCC TTTGACCTGA CTCCCCATGA CCTGGCTTCA GGA CTGGACG 63120  
 TCATAGACCA GGTGCTGGAG GAGCAGACCA AGGCAGCGCA GCAGGCTGAG CCCCACCCGG 63180  
 AGTTCAGCGC GGA CTCCCC AGCCCAGGTG CGTTCATAGC CAGACTGCTT GGTCTGAGG 63240  
 25 CCTGCGCTGC TGCAGGGTGA GCCCCACCCG GAGTTCAGCA CGGACTCCCC CAGCCCAGGT 63300  
 GCGTTCATAG CCAGGCTGCT TGGTCCTGAG GCCCGTGCTA CTGCAGTGGG CAGCCTGCCC 63360  
 TGTGGCTGTG TGTGGTCGGC CTGGGCACCA TCTATTCAGG CTGGCACTGC AGGGCATCCG 63420  
 CTTCTCTCAG AGGCTTCTTG GGTGTGAATT CTTGAGGGTC CTGTAGCCTG TGAAGGGCT 63480  
 GGTATTGTTT AGTAGTCTG GTATTTTCCA AAGACCTATG TCTTCTCCA GCCAGTATCA 63540  
 30 ACTTGGCCTC TACTGTGTAA AACTGGAAAA CTCTACTTTG TGAAGCTGAG TTGGGAGCAT 63600  
 CGCTTGAGGC CAGGAGTTTG AGACCAGCCT GGGCAACATG GCGGAACCTC GCCCCTGCCA 63660  
 AAAAATTAGC CAGGTGTGGT GGTGTGCTCC TGTGGTCCAA GCTTTTCTGG AGGCCGAAGT 63720  
 GGGAGGCGTG CTTGAGCCTG GGAGGCAGAG CTTCCGGTGC CCCAGATGAC TCCACTGCAC 63780  
 TCCAGCCTGG GCGGCAGAGT GAGGCCATCT CAAAAA AAAAAGGAAA ACTAAATATA 63840

TTCACTGTAA GGGCATTTTG CATCTTTAAA TGACCCACAA ATCTGGCATG CATCAGCTGC 63900  
 TCTGCCTGTA GGTTCCTTCC CAGTGTGTTGT CCAGAGGTGT ATTTCCACAC AGCGCTAGTC 63960  
 ACGGCATATG TGGAAAACGT GGAAACCCCTT CATGGATGTT GTCAGTTGGT CTATATTTTC 64020  
 TTTCTTTTTT TTTTTTTTGA GATGGAGTTT CACTTTTGTG GCCCAGGCTG GAGTGCAATG 64080  
 5 GCGCGATCTT GGCTCACTGC AACCTCCGCC TCCTGGGTTC AAGCAATTCT CCTGCCTCAG 64140  
 CCTCCCAAGT AGCTGGGATC ACAGGCGTGC ACCACCACGC CCAGCTAATT TTGTATTTTT 64200  
 AGTAGAGATG GTTCTCCGT GTTGGCCAGG CTGGTCTCGA ACTCCTGACC TCACGTGATC 64260  
 CACCCGCTTC GGCTCCCAA AGTGCTGGGA TTACAGGCGT GAGCCGCCAC GCCCGGCTT 64320  
 TGTCCATATT TTCTACATGG CTTCTGTAAA CAGCTGACTA GGAGTCTGTG TGAATATCTT 64380  
 10 CATAGGTTCT GCTGTGACAC TACTTGCTCG TGAGCATCTC CAGGTGTAAA CAGCATCAGC 64440  
 TTCCCCCATT TTCCTTTAAA ATCGCACATG TGGACGGACA CCACGGGGAC CCTGGACCCT 64500  
 GGGGAGCCCC GTCCTCACCC TTCTCACCAG GATGGCTGCT TGGTAGAGAG TGAGTTTGCA 64560  
 AAGTTGGCAT TTGTTAGTA CAGAAGTTAT CAGGTGTTCT GGCTTTAGAA TCCCTTTATA 64620  
 TATATATATA TATACATATA TTAAAGTGAC AGGGTCTCAC TCTGTTGCCC AGGCTGGAAT 64680  
 15 GTGGTGGTAC AATCAAAGTT CCCTGTAGCC TCGGCCCTCT GGGCTCATGG GATCTTCCCC 64740  
 TCTCAGCGTC TTAAAGCGCC GGGACCACAG GTGTGCACCA CTGCCACCGG CTCTCAAGAT 64800  
 TGCCACGCAG GGAGTTGCAG TGGGGGAAGG GGTTCCTGGG ACTTTGAACG CTCCACCTCC 64860  
 CTCTCTCCA CAGTCCCCCA ACCCCACCTC TCTAACGGGG TGGACGGCCG CCTCTTTCCA 64920  
 TCCTTCGCTT GCGCAGGGT GGGGAGAGTG ACAGGTCTCC TTCCCTCATC TCGGCAGCTG 64980  
 20 CCATTTTCATC GCTTACATAA CGTGGGAGAA ACATCCACCC ACCCCAGGC CTGTGTGAAC 65040  
 ATCACCACGG GGCCTTCTCC ACTCTTCAGT TTTGTTAGTT ACTTGATGTG CAGGGCTTTT 65100  
 TGTGTAACT AGTGGGGGAC GTGTGGTGGG GTGGGCTTCT GCCATCTCAT TCAGGACCAG 65160  
 AACTTCAGTT TTCATCCCTA TCTGTTCCCC CACCCCTTTG GAGATGGGGT CTCACCTGTG 65220  
 CACCCAGGCT GGAGAGCGGT GGTGCCATCA CGGCTCACTG CAGCCTCCAC CTCCTGCAGC 65280  
 25 CTCCACCTCT TGGGCTCAAG TGATCCTCCT GCCTCGGCCT CCCAAGCTCC TGGGACTACA 65340  
 GCGGTGTGCC ACTGTGCTTG GCAGGGTCCA TTCTTTTCCT CACACTTTAT TTATTGAAGA 65400  
 GCCCAGGCCG TTTACCCTGC AGAGTCGGAA TCTGTACAGG AGGGGCAGCC ACACGAGTTC 65460  
 CCCGGTTTAC TCTGAACCTA GGTGGCTTGA GGGCCCCAGT TAGACTGCGG CCACCGTTTG 65520  
 CCGGGCTCCA GATGGGACGT CCTTCTATC AGAAGGCTCA CAGTATCTCC TTTCCCGTTT 65580  
 30 CTTCCCATGT GAACATTGTT GCTGCTGAAC ACCTGAATAT GTTAATCACT GGGGGCTTGC 65640  
 AAGATGGCAG TGTGCTAATT CCATCATCTA GTCAGTTAGC AGGAATAACT TAGGACCACG 65700  
 CCCTGCACCA TATCAGCTAT GTGGTGATCC CATTACACA GGAAAGGTGG GACAAATGCT 65760  
 GGGGGTGGGC CGGGTGTGCT GTCTCACACC TGTCATCCCA GCACTTTGGG AGGCCCAGGC 65820  
 AGGCGGATCA CGAGGTCAGA GATTGAGACC ATCTGGCCA ACACGGTGAA ACCCCGTCTC 65880

TACTAAAAAT ACAAAAAAAT TAGCCAGGTG TGGTGGTGCA TGCTTGTAAT CCCAGCTACT 65940  
 TGGGAGGCTG AGGCAGGAGA ATCACTTGAA CCCAGGAGGC GGAGGTTGCA GTGAGCCGAG 66000  
 ATCGCACCAT TGCCTCCAG CCTGGCAACA GAGCGAGACT CCGTCTCAA AATCAATCAG 66060  
 TCAATCAAGT GTCATCACTG AATGTTTG TGTTAACGTG GGGATTGGTC CTGCCCCATG 66120  
 5 CTCCCTCCTG AATCTCACTC CTGACCTCAG TTGCTGCACC TTGAGGTGTT TTCTGTGGGC 66180  
 TCTTGTGTCC TGACCCCGGC GGTGTGTGCC TCTGCTGTCT GGGAGTCAGG ATTTTTCACA 66240  
 CTCATGTCTT GCTCCAGACC TGAATCAGC CAAGTCTCCA AGAAGCCCTG CTTTCTTTTC 66300  
 CTGCAAGACG GTATTTCAAG ACCCGCCGTG CGGCAGCGGG TTGGTCATGG TTTACTGGGT 66360  
 GGTCTGTGTG ACTGGGTGTT TTCGTGGAGA TACAGCCATA CGCACAGGTG TGTTACAAAA 66420  
 10 TGTTAATTCT AAAGGTCAA CACCCGCCA GGCATAAGGG CTCAGCGGTA ATCCCAGCAC 66480  
 TTTGGGAGAC CAAGACTGGT GGATCACCTG AGGTCAGGAG TTTAAGACCA GCCTGAGCAA 66540  
 CAGGGTGAAA CCCCATCTCT ACTAAAAATG CGAAAATTAG CCGGGCATGG TGGCGCACAC 66600  
 CTATAGTCCC AGCTAGTCGG GAGACAGACA CGAGAATTGC TTGAACCTGG GACATGGAGG 66660  
 TTGCAGTGAG CAGAGATGGC GCTGCTGCAC CCCTGCCTGG GTGACAGAGT GACACCCTGT 66720  
 15 CTCAAAAATG AATAGATAAA TAAAGATAAA ACACCTGCTC CTCTTGGTGT CTCCAGTTTG 66780  
 GATTTGGCCT GTGTAGCCTC TTCCTTCGCC TGTGGTGGA TTTGGCCTGC ACGGATTCTG 66840  
 TGTGGCCTCT TCCTTCCCTT GTTGGTGGAT TTGGCCTGCA CGGATTCTGT GTGGCCTCTT 66900  
 CCTTCCCTGT TTGGTGGATT TGGCCTGCAC GGATTCTGTG TGGCCTCTTC CTTCCTCTGT 66960  
 TGGTGGATTT GGCCTGCACG GATTCTGTGT GGCCTCTTCC TTCCCTGTT GGTGGATTTG 67020  
 20 GCCTGCACGG ATTCTGTGTG GCCTCTTCCT TCCCCTGTTG GTGGATTTGG CCTGCACGGA 67080  
 TTCTGTGTGG CCTCTTCCTT CCCATGTTGG TGGATTTGGC CTGCATGGAT TCTGTGTGGC 67140  
 CTCTTCCTTT CCATGTTGGT GTCCTTTTTT CCATGCCAGG AATCCTGGTT CTCAGGGCG 67200  
 GGGTGTGTGG CACGAGCGTG ATGCAGACTG CCTTTGCTGC CTTTCTCTTG CCCAGGGCTG 67260  
 AACATGGAGC TGGAAGACAT TGCAAAGCTG AAGAGTAAGT GTTGCCCTCC CCGCTCCTT 67320  
 25 GCAGCTGGGT GGGGCCTCCT CTTTGCAGG AGGTGGGTGA CACCTCCTCG ACCCAGAGTG 67380  
 ATCTGTCTGC GCCTGGAGGG GGCCATCGAT GCTGTTGAGC TGCCTGGAGA CGACAGCGGT 67440  
 GTCACCAAGC CAGGGAGGTG AGAGGCGGGG AGCCAGCCCC TTCCTGCAG GCCCAGCCTA 67500  
 GAGCTAGAAA CGGGCCATGG TGCAGTCCTG GGCTGTCACA TCACAGTGTA GGCCTGTTTT 67560  
 CAGGCTGTT TTCCCTTTTT GAGACCTGGG AGGAGCACCT GCTTTGCATG ATCTGGTTGC 67620  
 30 TGAGATGTTG AGAGGAGCAG CACACACTCC CACGGGACAG CACACAGCCC CCCACGGAAC 67680  
 GGCACACACA CCCATGGAAC AGCACACACA CTCCACGAA CAGCACACAC ACTCCACGA 67740  
 ACAGCACA CACTCCCAG GAACAGCACA CACACCCAG GAACGGCACA CACACCCAG 67800  
 GAACAGCACA CACTCCCCA CGGAACAGCA CACACCCCA CGGAACGGCA CACTCCCCA 67860  
 CGGAACAGCA CACTCTCCA CGGAACAGCA CACTCTCCA CGGAACAGCA CACACTCC 67920

	CACGGAACAG CACACACACC CACGGAACGG CACACACTCC CACGGAACAG CAGACTCTCC	67980
	CACGGAACAG CACACACACT CCCACAGACA GCACACACAC ACCCACGGAA CAGCAGACTC	68040
	TCCCACGCGG GGCCGCTGGG TTTCCTGCAG TTTCTCCTCC TCCAGGCCCT TCCCTGGACC	68100
	CTGGTCCAGT CCGTCATTTG AGCACAGGTG CCTGTTAGAA CGAGACCTTC TTGTTAGGAC	68160
5	GATGAGTGTC CCAGCCACCA CCTCTTTTGG ACTCCGGGAG GCCTGGAACG TTCTGAACGC	68220
	TCCGTGGGGC TCCAGTCTTC TCCGCAGCCA GGGCAGCAGG GTTTGCTGTC TGTCTGCAG	68280
	GCAGATGAGG AGTCAGGGCT GGGGCCTGTG TGGGGGCTCT CCTGAGCGCG CAGCCGCCGA	68340
	GGTGGAGCGT GTTCTGCCTG AGCGCCGACC TGGTCGGGGG AATCCCAGTT GCTTCCAGGT	68400
	GGAGCCACTG TCCTCAGCGT AATGCTCAAG GCTCTGGCCT GGCTCCTCGG CCACCCTGCA	68460
10	CCCTCAGGGT CCCCTCCTGT AGCTTCTGCT GCCCCATCAC TGTCACTCTC CAAAGCTTTG	68520
	GGGACTCTGC CCAGAGCCAC CGCCTCCCAG AAGCCCCCTGA CAACCTCTTG ACGACCCCT	68580
	AGTGACCCCA TCCCTCCCCT CTGACGGCGG CCCCTGCTCT GAGGCGGCTT CTTTCTCTCG	68640
	GTGCTGTTCT CGTCTGGCC AGGCCTCCTC TCCCCACCTG GAGGCTCCTG AGGGCGGAGG	68700
	CCTCTCACCT CCAATGCTGG CGTCCCCTGG AGGGCTGAAT TTGTTTCCGA GGAAGGAAA	68760
15	CTTCCACAGT TGTTGCCTTC AGTTCCAAAG CTGCAGCCTG ATTTCCCCCT CCAGGCTCGA	68820
	GCCTGTTTTC TTCTCGGCAG CTACATCTTT GACCACTGTC GTCCCCCTC AGGCCCGAGC	68880
	CTGCCTTCTT CTCCTCAGTT CCCAAAGCTG CAGTCTGGTC CCCCCGCCAG GCTCGAGCCT	68940
	GCCTTCTTCT CCTCGGCAGC TACATCTTTG AGCTGTTTGC TGAAGCCCAG ATCACGTTTC	69000
	AGACCAAGGG CTGCATCCTG GACTCGCTGG ACCAGATCAT CCAGCACCTG GCAGGACGTG	69060
20	AGTGCTGGCA CGGGGTCTTT GGTGCGGGCA AATGTGGCGT AGGGGGTGCA GCAGGCCTCC	69120
	ATCTTGCCAG TCAGGGCTCC CCTGGCCGTC ACCTGGCCGT CAGCAGGAAC AGGCCACAG	69180
	AACCTCATCT TCTGATCGGG GCGTGAGGC GTTAGTGCCA CTTGCCAGCT GCCGTAGAGC	69240
	CTGTCCCAGT TCTGCAGCTG GCGGCTTGGT CCTACAGCCT CATCCCATTG TTCTGCTTTT	69300
	GAGAAAGAGC AGCCCAAGGC CTTAGCTGGC TTGTGGGGCC TCTGGCTTCT CCACACCACC	69360
25	CCGAGTTCTG CTTCTCAGAG TTGTGGGGTC CAGAGGCTTT GCCCAGAGGC GGTGTCCCA	69420
	TGGGCTGCTC TGGTTTGAGA CGCCGGGCCC AGCGGGGTCT CTCCTCTGCT GCGCTCCCGG	69480
	GTGCTGGGGA GGGTGGCTTT TGCTGCTTCA ACCCTTAGGC GACCATAGAG CCTCTTTTCA	69540
	AGTCCCCTG ACCCCCTTGG AGACTCTGTC CCTGCCTGGC TTCTCTCCTG GCTGCTGGGA	69600
	AGAGCAGGCG AACTGCCCGC CTTGAATGGA TGCTGCGCTC CACCTGGGC CCCCATTGG	69660
30	GCAGGAGATG GAGCTTGGA GTGCGGGCTGA GCGGGCTCAT GCTGGAAGGG CCGGGGCTGG	69720
	GGTCGGGGCC TCCCCTGCCT GCAGTGTGGG TGTCAGCGCC CTGCTGCCCT CCAGGTGCTG	69780
	GAGTGTTCAC CAACACGGCC GGACTGCAGA AGCTGGCGGA CATTATCCAG GTGGGGCCTG	69840
	CTCCTCTGTG GCATCTCCTT CCCTGATGGA AGCCGGGCGG GTGCCTTCTC CTGCTGTATT	69900
	AGTTAACTGA TTCTAGACTT GGGGATGGGA GAAAGGCCCC TACACCACCT GTTTCTGATT	69960

	GGCAAACCTCT	CGGCTCCTTT	CCAGTGCCCT	AAACCCACAC	TGGGCCTCCT	GCAGGGATGG	70020
	GGGAGGACGA	GGTCTGGTGG	CACATGCCCC	GGGTGATGCT	GGTGAGGGAG	GACGCAAAGG	70080
	ACAGTGGGGG	CCGGGGAGCC	GCTCCTGCCC	TGTCCGGGCC	CTCAGGCCAG	GGGGGACCCA	70140
	CTGCTGGCAG	CCCCAGCAGC	CCCAGCTGCA	CGCAGATGAA	GAGCTCTGGA	CACACGCGGC	70200
5	TTCTGAACA	GCTTCTCCAG	GGACAGACAA	ATGGGGACCC	TGCAGGTTCC	CGGCAGGGGT	70260
	GTCCCTGGGA	GCCCATGATT	GGGGGTGCGA	CCCTGGCCCC	CTTCTCATTG	GGCCCGTCCT	70320
	GTCTTGCAAT	GGCCGTCCCA	TGTGAGGTCT	GCTTCTGGCT	CCATGCCTAT	GGCAGCACCT	70380
	GCTTTCCCTG	GCCTAGAGGT	GCTTGTCCGG	TTTGTGGAGG	GCACGCCCCA	TTTTGGGTGC	70440
	TCTGGGCACG	TTGCCTCTCC	GGGGCCTCGG	TGGCTTTTTT	AGAAGCAGAC	TCAGAAGTCC	70500
10	CTGACTGGGG	AAGCCAAGGC	ACAGGTGGCT	GTGTGGAGCC	CTGTGAGGCC	TCCTCTGTGC	70560
	TGCCCACGCT	GTACCTGCTG	GCCACACGAG	ATCATGGCAG	GGTTAGGCAG	GGCTGCCCAG	70620
	CGCTATGACA	GCTTCATGAG	TGTCCATCTG	GCCTGTGGGG	TGCTTGAGCT	GGGGGAGGCC	70680
	GCAGAAGAAC	CCTGGGATGC	ATGGCTGGCC	TGTGCATGCT	GCTGGGCATG	GAGCTGCAGA	70740
	TCCCGGAACA	AGCAGGCACT	GCCTTCTCCT	TCACAGACGC	AGCTCTGAGC	GGGGGCGAGA	70800
15	CCTGGGCAGG	GACCAGGTGG	GGTGGGCACA	GGGTGGTGGG	GCCCAGGCTC	AGCCCTCCCT	70860
	CCACTGTGGC	CGTCTCTGTG	GCCAGTGACG	CCACAGCCTG	TGTCTTCTCT	TGCGGGTAGC	70920
	TGGGGCTGGA	AGGACAGCAC	TGCCTTGTCC	TCCCAACTCC	TCCCCAAAGG	CACGGTGGGC	70980
	ATCCCAGGCC	CAGACCCCTC	TGTCTGTGGC	TCCTGCCTGC	CAAGGGCTGC	TGTGCTGTCC	71040
	CGCATGGAGT	GTGGTTGGCT	CTTCAAGCAG	GAGGCCGTGC	ACCTATCAGG	CGGACCTGCT	71100
20	TCCATGTCCC	TGATGGGTCA	CTGCAAAGCA	CCTCCAGCAC	ATGGCCAGGC	GAGGTAGCCC	71160
	TGCAGCCCAG	GGCCTGGAGG	GCAGGTGTGA	GCTGGCCCCG	GCCTGTCCCT	CCCTGGAATA	71220
	CAGCTTCCCA	GGCTCCCACT	TATGGAGAAG	TCTCCTCCAC	ACTATGGAAC	TGAATCCTAG	71280
	AATGTGGCTT	CTGAGGTTCC	TACACTCGAA	CTGAATCCTG	GAATGCGGCT	TCCAAGGCTT	71340
	CCAGCTATGG	AGAAGACTCC	ACACTCTGGA	ACCGAATCCT	GGAACGCGGC	CTCCCAGGCC	71400
25	CCCAGCTATG	GAGAAGACTC	CACACTCTGG	AACCGAATCC	TGGAACGCGG	CCTCCCAGGC	71460
	CCCCAGCTAT	GGAGAAGACT	CCACACTCTG	GAACCGGATC	CTGGAACGCG	GCCTCCCAGC	71520
	CTCCCACTTA	AGGAGAAGTC	TCCACACTCT	GGAACCGGAT	CCTGGAACGT	GGCCTCCCAG	71580
	GCCCCCACTT	AAGGAGAAGA	CTCCACACTC	TGGAACCGAA	TCCTGCACAC	TCCATCGGTT	71640
	TGGAATTTCC	TTTGGCTGCT	GCTCTAAGTA	GCCGCTGGTG	GATGACTCAG	CTTCTGCCAG	71700
30	CCCTCGGGTG	CCTGGAGGAT	GAGGGACTGC	ACACAGTGCT	CACCCGCGTT	GGCTCCTGAG	71760
	CCCCTGCAGG	TGTGGGCGGT	GCCCATAGGG	CTGGTGCTGG	GTTGGGCCTG	CAGCCCTGAG	71820
	TCACAGGTGA	CCCTGGGGGC	AGAGTGGGGC	CAGTGGCCCC	AGGAAGAGGA	TGTGGGATGC	71880
	ACAGCTCAGC	TGGAGGCGAA	CTCCAGGCAG	GGTCAGGCCG	TGTGCTCGGA	AGTCAGGGCT	71940
	TAGCTGGAGG	CAAACCTCTG	GCAGTGCTGG	CCCGTGTTGG	GGAACCAGTT	GGCCCTGGGC	72000

CCCCCTGAGA CTGCTGGGTC CTCATCCCTC TCTGCCTGAG GCCGGAGCTG CCCTGGGCTG 72060  
 AGGCACAGGG GGATTTGTGG TGGTGTTTTT TTGAGAAAGG GTCTCGCTTT GTCACCCCGG 72120  
 CTGGAGTGCA GGGGCTTGAT CACAGCTCAC TGCAGCCTCA ACCTCCTGGG CCCAAGTGAT 72180  
 CCTCTTGCCCT CAGCCACCCG AGGAGCTGTG AACACAGGTG TGCACCACCG CACTCAGCTA 72240  
 5 ATTTTTTAAAA TTTTTTTGTA GAGATGAGGT CTTGCCATGT TTCCCAGGCT GGTCTCAAAC 72300  
 TCCTGGGCTC AGGCAGTCTG CCCGCCTTGG CCTCCCAAAG TGCTGGGATT ACAGGCAAGA 72360  
 GCTTCCATGC CTGCCCAGCA GAAGGCTTTT CGAAGGAAGC TGTTTCCTGA GGCAGACTCA 72420  
 GCCCTGCTCA TGGCAGCCAC CAGCGTGGGG GTGAACCTGT TCTGTTACTT CCATCCCCGT 72480  
 GGGCCAAATG CTTTGGTAAA ACACAAGGCC CTGTGTTTAG CTGTCTTGAC AGTGAAAATG 72540  
 10 GCTGGGAAGG AAGGAAGGAA CGGAAGGAAA TTTCTCTCTC CTTCTGTGCG TACCCAGGCA 72600  
 CGTGACATG CATGCAGAGT ACGCACACAC GCACGCACGC CTGCACAAAT CCACGCATGT 72660  
 TGCCAAGTCT CTGTGTCCA GCCGTGGTGT CTGCCCCCGG GTGTTCTCTA GTTCGGCTTC 72720  
 TCCGCATTTT TGTGAATGAT TCCGGCTTCT TGGTGTTCCT AGCAGAAGTC CCTCAAGTCT 72780  
 GCGGCGGGGC TCTGACGGCG GTGGCTTGGC TGACATGGCC ACATTGCTGA GCCTGTTGGG 72840  
 15 GGCTTTGCGT TCCTGTCTG GCCGTTTTTG GCTCGTTTTT CAGGAACGGT CGTCACGCGC 72900  
 TCCTCTCCTA GTGCAGGCAT CATTCCTTTC CCATTGATTG GCAGGGTTCT CTGTAAGTTC 72960  
 TGAGGATCCC ATATACATAT ACTCTCTGTA AGTTCTGAGG ATCCCATATA CATATTCTCT 73020  
 CTCTAAGTTC TGAGGATCCC ATATACATAT TCTCTCTCTA AGTTCTGAGG ATCCCATGCC 73080  
 GACATACATA TTCTTTCCTT GTCTCATGCT GGTCAATTTT TCCATTTTCA TGACAGGTTT 73140  
 20 GGTGAACACA TGTTTCCTTG TCAGATTTTT GTTCTGAGCT TGTGCCTCCC GACCAAGATG 73200  
 CTAACCCGGG TCTTGTGTAT TCTCCAAACT GCACTGTAGA GTGACGGAGC TTTGTGTCTG 73260  
 GGCTTCCATG CCTTCTGACG TCACCTGTGG GGGTGTGAAA GGCAGACTCT ACCTTGATTT 73320  
 TTCCAGCAC GCCACACCGG TGGTCTGTG CGCTGACCGA GCGGCTCGGC TTCCCCAAC 73380  
 TCCACTGGGC ACCTGCCACA CTTTTCCTCA TGTTTTGTT CACTGTGGTT TTGTGTAAG 73440  
 25 TCCTGGTGTT GGCTGAACC AATTCTTTT TGTGTGTTT TGAGACAGAG TTTTGCTCTT 73500  
 GTTGCCAGG CTGGAGTGCA GTGGCGGAT CTCGGCTCAC TGCAAGCTCC GCCTCCCGG 73560  
 TTCACGCCAT TCTCCTGCCT CAGCCTCCCA AATACCTGGG ATTATAGGCA CCTGCCACCA 73620  
 CGCCTGGCTA ATTTTTTGTA TTTTGTAGT AGACGAGGTT TCACCGTGT AGCCAGGATG 73680  
 GTCTCGATCT CCTGACCTCG TGATCCGCCT CCCAAAGTGC TGGGATTACA GGCATGAGCC 73740  
 30 ACCGTGCCCC GCCTGATATT TTTAGTAGAA ATGGGGTTTT GCCATGTTGG CCAGGCTGGT 73800  
 CTCGAACTCC TGACCTCAGG TGATCCTCTC ACCTTGGCCT CCCAGAGTGC TGGGATTACG 73860  
 GGTGTGAGCC ACCACGCCCC GCCTCTTGTT CTTTGTAAAC CTGCCCTGAC GTTTTTTCCA 73920  
 TAGTGATCT TGGAGTCAGC GTGTCTACTT CCTGTAAAAA TCTTACTGTG ATTTTGACTA 73980  
 GAATGTGTTG AATTCCTGTT TTTTTTTTGA GTCAGGGTCT CTCTGTTGCC CAGGCTGGAG 74040

	TGCAGTGGGA	CCATCACAGC	TCACTGCAGC	CTCAACCTCC	TGGGCTCAGG	GGATCCTCTC	74100
	AGCTCAACCT	CCCAAGTAGC	TGGGACCACA	GGCACATGCC	ACCATGCCCC	GCTAGGTTTT	74160
	TTTTTTTTTT	TTTTTGGTGA	ACACCCTGGG	GTTGCACCAT	GTTGCCCAGG	CTGGTCTCGA	74220
	ACTCCTGGGT	TCGGGCAGTT	TGCTCCTCTC	AGCCTCCCCG	AGTGCTGGGA	TTACAGGCCT	74280
5	GAGCCACTGC	ACTAGGCCAT	GTTGAATTTT	TAGATTAAAT	TGGGGCCCTC	AGGGGCACAG	74340
	AGAGGAGGGC	TGGGCCAGTT	GGCGGGAGGA	GAGGCCCCCT	GGGCTGCCGC	ATTTTCAGTG	74400
	CATGGAGATG	GCCTATGTTG	GGGGAACACA	GAGCTCACCG	GGGGTCCCTG	CAGGGAGGAG	74460
	AAAGGGTCAG	GCAGGTGCCA	GCTCCTGTCC	ATTGGCCTGG	GGCTGCATGA	TGGCAGGGGC	74520
	CGGTGAACCG	ATGACCCCTG	GGTGTCTCTG	GACCTTCTGT	GTATGCGGCT	GATGCTGCAG	74580
10	AAAGTCGGGT	GGCCTCAGGC	TCCTGACGGG	GCTGCACTTC	CTCTGCCCTT	CAGATTGTGT	74640
	TCAGTGTGGA	CCCCTCCGAG	GGCAGCCCTG	GTTCCCCAGC	AGGGCTGGGG	GCCTTACAGT	74700
	CCTATAAGGT	AGGGGCCACC	TCCAGGAGGC	AGGTGGAGGG	CAGCCCTTGT	TCCCCGGCAG	74760
	GGCTGGGGGC	CTTACAGTCC	TATAAGGTGG	GGGCCACCTC	CAGGAGGCAG	GTGGGGCTGG	74820
	GGGTCTTCTG	GTCCTAAAAG	GTAAGGGGCT	GCCCCCAGGA	CATGGGCGGG	GCCTCCACAC	74880
15	TCCTGGTCTT	GTCCCTCCCA	GGTGACATC	CATCCTGATG	CTGGTCACCG	GAGGACGGCT	74940
	CAGCGGTCTG	ATGCCTGGAG	CACCACTGCA	GCCAGAAAGC	GAGGTACAGA	CCTGGGCCCCA	75000
	CACGCTCCCC	GCCCGCCCGG	GTGCACTGCC	CGGCACCACC	ATGCCACAGG	CTAGGCACAT	75060
	GCCCCGCCGT	GGATCTCCTG	CCCCCATGGG	CCTGGCCACC	TTCTCCATAT	CCAGGCCAAT	75120
	CCAGAGCATT	CTCCTCACTG	TCCCTCTGAA	GATTGGAGTT	ACTGAGAGAC	GTAGGAGATG	75180
20	GCCTGATGGC	ACCGTGACCT	GCCCAGAGTC	ACCTGGTTGG	TGGTGGCAGA	GCCACAGCCC	75240
	AGCCAGGCCT	CCCTGCTGGG	ACACGCTCGT	TTATGCCGAG	GCCGTCAGCA	CAGAGCCTCC	75300
	ACAGTGAGGC	ACGGCTCTGC	CTGCTGCCTC	CACGCAGCGC	CTGGCCGGGC	CAAGCCTCAG	75360
	GGTCACATCT	GAAGGGGGCC	CGGCTGGCCC	TGTTGTCCGA	AGCCCTTGGT	GCGCTCAGCC	75420
	CCGAGGCCCC	ACGTGCCTTC	TTGGCTTCCT	GTGCTCCGTG	GCGTCTTCGA	GTCGGTGCTG	75480
25	CCGGGGACGC	TGTGTGGATG	GGGTCTGTGA	GTGTGCCCTC	GGCTCCGTGT	CCGGAGCCCT	75540
	GTGGTTCTTG	GGGTGTATCT	GGCCCCACCC	CCACTGCGTG	GTGTCCAGGG	TGGGGCTTCA	75600
	CGGCTGCAGC	TGCGGGAGCT	GCTGCCCTCG	CCTTGTGCTC	CAGTGGGGCC	TTGCCTCTGG	75660
	GCTTGGTTCG	TCCCTCTCTG	GAACATTCTT	TCTCAGCTGC	TGTCCGACCC	ATGGTGGCAT	75720
	GACGTGGCCC	TGGCTGAAGC	AGCCCTTGTG	CGGTTGCTGT	GGTTGGGTCT	GCCTGGCCGA	75780
30	GCCGGAAGGG	AAGGGCTGGG	AGGGCCTCAG	GGTGGCGTGG	CTTGACCCCC	GCTCGGTGAT	75840
	GGTCCTGCAG	CAAGGCCTCT	CCCAGCAGGA	AGCGTCCATC	CCGGGGGGAG	GCCGGCGCCC	75900
	CTCACGCAGT	TGGGGTTGCG	GGAGGCAGTG	CGTGCTGAG	GCAGCCGGTG	CACAGATTCC	75960
	AAGGGCCTGG	AATCTGTTTG	TTCCATTGAC	CTCTGATGTC	ACTTGACTTC	TCAGAAGCAG	76020
	CCACTCCCTG	CACTGGGCGT	TTGTAGGAAA	TGAGCTCCTG	GAGGAGGGGG	TGGGGAAGTT	76080

	CCCCCATTGC	AGGGCACACT	CAGCCCCAGG	AAGGAAACGT	GCCTCGTCCC	TGCTGACTCC	76140
	GAATCGCAGT	CAGAGTCGTT	CTGCTTGTGC	CGTGTGAAT	TCCCGGCATC	CGGCATCCAG	76200
	ACTCAGCCTC	CTCCCCAGGC	CACGGCCGCC	GTGGCCAGTC	GGTCAAGCCC	TTCTAGGAAC	76260
	TTCTTTGAG	CTGGCGCCCT	TGTTCACTGC	TGACGCCACT	CAGAGGCTTG	TGCACGTGTC	76320
5	CTGCTTCCAG	GCAGAGCTGG	GAAGTCGCAC	CCCGTCTTCT	GCACGCGGCC	GTGGAATGTC	76380
	GGGATGCCGG	CGCTTCCTTC	CCGTGTGCTC	TTGGCGGGGT	GGGCTTCTTG	CCCTGAGCCG	76440
	CATGTACAG	TTTCTGCAGA	AGTTTAGGGT	TGGAGTGGGC	TGACCTCTCT	GCAGGTGTCC	76500
	CCAGCCTCTG	CCTGGGGTCT	GCCTCCTACT	CCCAGGACCC	CCTGTCCCCC	AGAGGGGGCC	76560
	CAAGCTGGCA	GGCTCACACT	CAGGGCAGCC	TCCTTTGTTC	TGACTTCTGC	ACAGTGGGCC	76620
10	TGGGTGGCTG	CCCGCGGCTC	GCTTGCTTGA	TGCCAGTGGG	TGGAGAGGGT	GATGGGCAGA	76680
	GAGGCAGGTG	GTCAGGCCCC	CAGTCCCGTC	CTCACACTCT	GTGCCCTCTG	CCGCCCCCCG	76740
	CCCCACAGGG	AAGGTGCTGA	GCTACTGGTG	CTTCAGTCCC	GGCCACAGCA	TGCACGAGCT	76800
	GGTCCGCCAG	GGCGTCCGCT	CCCTCATCCT	TACCAGCGGC	ACGCTGGCCC	CGGTGTCTCT	76860
	CTTTGCTCTG	GAGATGCAGA	TGTACGGGCC	ACCCCTGCCA	GGCCTGAGC	ACCGGTGACA	76920
15	CCTCTGACAT	CAGCGGGGTG	GAAGTGGTGG	GGGTCCCCAT	GAGCCGGGTG	CTGGGGGTCT	76980
	CGGGCCTCGA	GGGCTAAAGG	GGTGCTGGTG	CACTTCCCCA	CTGTCTGCTC	CCTCTGGCCA	77040
	CGCTCAGCCC	TTTCCCAGTC	TGCCTGGAGA	ACCCACACAT	CATCGACAAG	CACCAGATCT	77100
	GGGTGGGGGT	CGTCCCCAGA	GGCCCCGATG	GAGCCCAGTT	GAGCTCCGCG	TTTGACAGAC	77160
	GGTGAGGGCC	TGTCCCTGGG	CCCTGCTGGG	GTGGGAGGTG	GGGGAGCACT	GAGGCCTGAG	77220
20	GCCCTGAGCA	GTGGCCTCTC	CGGCTCTAGG	TTTCCGAGG	AGTGCTTATC	CTCCCTGGGG	77280
	AAGGCTCTGG	GTGAGTGCCC	TGAATGCCCC	AGCTGTGCCG	ATCCTGGATC	CTGGACCCCT	77340
	GCTCCCAAGA	GCTGGTAGGG	ACCCCTGCAG	ACATCCTGCC	CCTGCCCTTGA	CCCCGGCCCC	77400
	TGCACTTCCA	GGCAACATCG	CCCGCGTGGT	GCCCTATGGG	CTCCTGATCT	TCTTCCCTTC	77460
	CTATCCTGTC	ATGGAGAAGA	GCCTGGAGTT	CTGGCGGGTG	CGTCTCCCTT	GTGTCTTGGG	77520
25	CGGGGTGGGT	GAGGGCAGGG	CTGGAGCATG	AAGCAGGCAG	TGGTCACAGC	TCCTGCTTGC	77580
	CCTCATCGGA	TCGGCGGCGT	GACCAGGGCT	GCCGTGTCCC	TGCCTCTTCC	TCCCACAGGC	77640
	CCGCGACTTG	GCCAGGAAGA	TGGAGGCGCT	GAAGCCGCTG	TTTGTGGAGC	CCAGGAGCAA	77700
	AGGCAGCTTC	TCCGAGSTCG	GCATTGGGCC	GGGGCTCTGG	GCCTGCTGCC	CCCTCGTGCC	77760
	TCCCCTGCCT	CTCACAGCTT	CCCCAAGGCT	GACCACTGGC	CCTGACCATG	GGCTCCGGCG	77820
30	GCTCCCGCTG	CCTCTTCAGG	GCTCCTGCGT	TTCTTCTCTG	GCCCTGAGTG	TTGCCTCTTA	77880
	TCTTACAAAG	CCCCCAGCAC	CGGGTGGGTG	TGGTAACAGT	GGCCCTCCTG	TCTGAGTAGC	77940
	CCTAGTCGGC	CACCTTGGCC	CTGGGGTTCC	CCGTGTTTTT	TGGGAAGCAC	TGAGCAGGCG	78000
	TGGGGTCAGC	CTGGGATCCG	TGCCAGGAAG	AAGCTTCCAG	AACCCGATTG	GCCTTCCTGG	78060
	CTAGGACGAT	CCTTCATCTT	GGAGCATGAG	ACCTGGGTCT	CCCTCATGGG	GGAGGAAGGG	78120



GCTGGGGGGG GGCTCCAGGC TCAGCCTCAC CAACTTTCCT TCCAGACCAT CAGTGCTTAC 78180  
 TATGCAAGGG TTGCCGCCCC TGGGTCCACC GGCGCCACCT TCCTGGCGGT CTGCCGGGGC 78240  
 AAGGTGAGCT CTCCAGGGCC CTCTGCCCTG ACCTGGTTGC CTGTTCCCTG GTGGGTGCTT 78300  
 ATGGCTCCCC AGCAGACTCT GGGCCCTGGG GGCTGCCCCG TCCCCTCCTT GGGTCCACG 78360  
 5 AGAGCGACTG CTGGCCCTGC TGGGAGCGTG TCCTGCTCTG GGCCTGGGCA GGCAGGATGG 78420  
 GAGTTTCCTG GCCACAAGAG TTGGAGGTGG CGTCTGGGAG CTGTGGACCC CAAGTGGGGT 78480  
 CCTGACCCAC AGATGGAGCT TCCTCCCACC CCTGTTTGGG GACGGAGCCT CGGGGAAGGT 78540  
 GGCTGGGCTG GGTGTGGGCA CCAGGGAGAG GAGCCCCAC GCGCCAGGC AGCTCCCTGG 78600  
 TGTGTCCCTT AGGCCAGCGA GGGGCTGGAC TTCTCAGACA CGAATGGCCG TGGTGTGATT 78660  
 10 GTCACGGGCC TCCCGTACCC CCCACGCATG GACCCCCGGG TTGTCCTCAA GATGCAGTTC 78720  
 CTGGATGAGA TGAAGGGCCA GGGTGGGGCT GGGGGCCAGG TGAGTTACAG CAGGGTGGGG 78780  
 CTGGGGTAAG GCGGTCTGGT GACTGAGCCC CCGCCCCGTG GCCAAGGGAG CCCCCGTGAC 78840  
 CGAGCCGCCT CGCCCCACAG TTCCTCTCTG GGCAGGAGTG GTACCGGCAG CAGGCGTCCA 78900  
 GGGCTGTGAA CCAGGCCATC GGGCGAGTGA TCCGGCACCG CCAGGACTAC GGAGCTGTCT 78960  
 15 TCCTCTGTGA CCACAGGTGC GTGCAGTCCG GTGGCAGGCG CGGCGCCAGG GGACACGCCC 79020  
 ACACCCCACT GGGCCCTGG ACTCTCCTTC CCCACATGAG GCCCCGTCTC CTCCAGAGCC 79080  
 TCTCCGGCTA CTCGGGGTCA GCGTGGGGCC CCTGCAGCAG ATGAGGGTCT TCACTTCGGT 79140  
 GAACTGAACC CTTGAAGCGG CTGTGGGCAG GGCAGCAGGG CTATGGCCAC CCCCCAGGT 79200  
 CGCCTTTGCC GACGCAAGAG CCCAACTGCC CTCCTGGGTG CGTCCCCACG TCAGGGTGTG 79260  
 20 TGACAACCTT GGCCATGTCA TCCGAGACGT GGCCAGTTC TTCCGTGTTG CCGAGCGAAC 79320  
 TGTGAGTTCC TGCCAGGGA GGGGATGAGG GTGTTGTCCC CAGAGGAGCC AGAAATGGGT 79380  
 CCACCCACCC CCATGGTTCT GCAGATGCCA GCGCCGGCCC CCGGGCTAC AGCACCCAGT 79440  
 GTGCGTGGAG AAGATGCTGT CAGCGAGGCC AAGTCGCCTG GCCCCCTCTT CTCCACCAGG 79500  
 AAAGCTAAGA GTCTGGACCT GCATGTCCCC AGCCTGAAGC AGAGGTCTCT AGGTGCGGAC 79560  
 25 GGGCAGCGCT GGGTGGGCGG TGTGGGGGTG GCGGAGCGGG CGGCGTGGGG CGGCGAGCAC 79620  
 CAGGCGCCCA GGGCGGAGGC GACTCACCTG GCTTTGTGCG CTTCCCCTCC CACCTCCAAA 79680  
 GGCTGCCTCT CCCTCCTAGG GCAGGGCCCC CACGGGCTGC AACCTCCCC TACAGGCAGA 79740  
 GAACGCCCCA GGCAAGGATG CCCCCGAGG CTGAGACTCC CCCCATTAGC AGGGAGGACA 79800  
 CCCACAGGCA GGACCCCAAG TGCTGGGACT CTCCCCAAG AGGGGCTTTG CCACAGGCAG 79860  
 30 GGACCCACAG TGGGGCCCC CGTGGGCTTC ACTGCGCACT CGGGTGCCCC TGCAGGGTCA 79920  
 CCAGCTGCCG GGGACCCCGA GAGTAGCCTG TGTGTGGAGT ATGAGCAGGA GCCAGTTCCT 79980  
 GCGCGGCAGA GGCCAGGGG GCTGCTGGCC GCCCTGGAGC ACAGCGAACA GCGGGCGGGG 80040  
 AGCCCTGGCG AGGAGCAGGT ACAGTTCCAG GGCCTTGGGA TGGACACAGA CCCTCTGTCT 80100  
 CCTGAGGCCA ACCCGACCCC GCCCATCTGG CCTCAGGCAC CTCCCCACAC ACCCCTGTAA 80160

ATCCCCTGCC TGGCAGGCAG GCGGGCAAGC GGGCGGGGGA TCCCAGCTGC CTGGCTGTCT 80220  
 GTGGGTCCCTC CACCCACCT CACCCACAGG CTGCTGGCTC CCAGGTGGTG CATGCCCTGG 80280  
 CCCTCCGCGG GTGCCCCCA CATCACTTTG GTTCTCTGGC GGGTCAGCTT GGCTCAGTGC 80340  
 ACTCAAGGTC GGGTGCCCTT GCCACTGGCT GCGCTTGAGG CTGGCCTTTC TCCAGGAATG 80400  
 5 TGCTGCGGGT GGAACCCAGG TTCCTTCTTC CTTGGGGCCT TTTGCCCCAG AAGCCCATAA 80460  
 TTCCTCAGGC CAACCCGAAA TTTTCTCCCT GCTTCCTGCT GGGAGCCATT CCCCTCTTCC 80520  
 TGCCCATCCC TGCCCTTCAG GCCCCTGGAG TGAGCTCCAG GTGCAGGCAC CAGGCACCTG 80580  
 TGTCCCTTC CTGCCAGCCC CTCGCTGTGG TCGGACTGTC TTCCCTGGAC CTGCTCTTAC 80640  
 AAGTCACCAC CTGCGAGCCT CATGAGCCGC TGGTGTGACT TGGACAGGAC CAAGTTGTGG 80700  
 10 CACTGTCACC GGGGTGTGCT GTGCCCCCT CCCCCGACCT CCATCTTGGC TCAGGGCTCC 80760  
 TTGGGACCAT CTTCCCTGTG CGTCCAGGTG CTTTGGGACC CCAGAGTGTG TGGTTGGGGT 80820  
 CTGTGTGTGG TTGTGAGCTG TGTCTCTC AGGCCACAG CTGCTCCACC CTGTCCCTCC 80880  
 TGTCTGAGAA GAGGCCGGA GAAGAACCGC GAGGAGGGAG GAAGAAGATC CGGCTGGTCA 80940  
 GCCACCCGGT GCGTGAGCTG TCCCTGCACC TGTGCCGACC ACCATAGACA CGCATGGGAA 81000  
 15 CGCAGCCGTG GGTGCCCCA GCCACGGCTG GTCCCGATGG GACCAGGGAA TCCACCCCCA 81060  
 GGAGCTGATG TCCAGGGCAG CTGTGATGCT GACGGCCAGG GGCTCAAGTG TGTGGTTTCT 81120  
 TCTGCAGGGG GCTCATGAGT CCCAGCTGGA ATCAGGCCCC ACCCTTGGGC AGGTTTGGCA 81180  
 TGGGGCCTGC AGCACTGGGC TTGGCCCTGG CATTTCCCTC AAGTGTGGAT GCACACCTGC 81240  
 CTCATGTGAG GGACACAGCC CATTCCTAGC CTTGGATCAA AGAACGGAGT TATAGCCGGA 81300  
 20 GCCAGGAAGC CCCCTGCCTG CTGGAAAACC CCAAGTGTGG CGGCCTTTGT CCATGTCCCT 81360  
 TGGCTTCTGG GAAGAACTGG GTGGTGCCCA GGCAGGGCTG GTGCCATCAG GAAGTGGGTG 81420  
 GCTGCTGAGG GGCCTGGGCT GGCAGGGGCC TGGGTGGGGA GTGCCTGGGC CGCCCCTGCC 81480  
 TTGGTTTCCA CGTTTCCGTG TTGTCTGGG GTGTGTAGAG AGATGGGCAC TGCTCATCCG 81540  
 GAAGCCCCTC CTTGTGCGCT GCCATCCTGG GAGCCTCAGC CGCATCCGCT GTGGGGCAGG 81600  
 25 GGGCTTGAGG GAGGAGGAGA GAGACGGGCC ATGCAGGACC CCTGGCTTGA GGCAGAGCCA 81660  
 ATCTACCCTT TGCCCATCA CTGCTCTCAG TTCCCTGCCA GCCTCTCACT GTGTGACCTC 81720  
 AGACGGGCCC AGCCCCACAG CTTTCTTCCC GCAGCCCCCTC CCTATGTCCA TCCAGCCAGC 81780  
 CAGTTTCTCA GGCAGCAGCC CCACCTCGGC AGTCACTGTC CCAGGGAACG CTCAATGTTT 81840  
 CAAGGAAGGC TCTGCAGCCC CAGGGACCAG ATGATGAGGC TGGCCCTGAT GGAGCCTCGG 81900  
 30 GCCTGTGTCC TGCAGGAGGA GCCCCTGGCT GGTGCACAGA CGGACAGGGC CAAGCTCTTC 81960  
 ATGGTGGCCG TGAAGCAGGA GTTGAGCCAA GCCAACTTTG CCACCTTCAC CCAGGCCCTG 82020  
 CAGGACTACA AGGGTTCCGA TGAATTGCCC GCCCTGGCCG CCTGTCTCGG CCCCCTCTTT 82080  
 GCTGAGGACC CCAAGAAGCA CAACCTGCTC CAAGGTGCCC TGGCTTGACAG AGGCCACCCA 82140  
 CCCTGAGGGC AGTGCTGCCG CCGCGTGTGG GGTGGGGGCC ATCTGGGTCC AAGGTGGTCT 82200

	CTGTTCTCTA	GAGAAAAAGG	GGCAGATGGG	GACAGACGCC	CCTTCCTCTA	CAGGCTTCTA	82260
	CCAGTTTGTG	CGGCCCCACC	ATAAGCAGCA	GTTTGAGGAG	GTCTGTATCC	AGCTGACAGG	82320
	ACGAGGCTGT	GGCTATCGGC	CTGAGCACAG	CATTCCCCGA	AGGCAGCGGG	CACAGCCGGT	82380
	CCTGGACCCC	ACTGGTAAAT	GGGGCCCCAG	GTGGGACCCT	CAGACTCCTG	CGTGGGAAGG	82440
5	AGTGTGGGCC	AGAGTCCTGG	GCTGCTTGGG	GTGGGCATCC	TCGGGCCCTG	CTTGGCCCCG	82500
	CCTCTCTGTT	CCCCTATGGG	AGTGATGGGG	GCCTCCACCT	CCACCACCAG	CACCAGCAGC	82560
	ACCACCTCCA	CCTTCACCAC	CACCACCTCC	ACCACCACCA	CCTCCACCAC	CTCCACCTCC	82620
	ACCACCTCCA	CCACCTCCAC	CACCTCCACC	ACCACCACCA	CCTCCACCAC	CACCACCACC	82680
	ACCACCTCCA	CCACCACCAC	CACCACCACC	ACCTCCACCT	CCACCACCTC	CACCACCACC	82740
10	TCCACCTCCA	CCACCACCAC	CACCTCCACC	TCCACCACCT	CCACCTCCAC	CTCCACCACC	82800
	ACCACCTCCA	CCACCACCAC	CACCACCTCC	ACCTCCACCA	GCAGCAGCAT	CACTTGTGTG	82860
	GGAGACCTTG	TGCAACTCCA	TGCACAGCCC	TGTCCTGCCC	ATAGCCCCGA	CCCCTAAGEA	82920
	CAGCCCTGTC	CAACTGCCAC	ACGTCCCCTG	CCTCCCATGC	ATGGTCCTGG	GGGGTCAACT	82980
	GCACACGCCA	GGGTCCTAGG	GTCCTAGACC	CCTGTCTCTC	CTGTTTCTGC	CTCTGTTTGG	83040
15	GGTGGAGTCC	AAGTCTCCAG	AGGCGGAAGC	ATCTGTGTTC	GTGTGTTAAT	GAACAGCCCC	83100
	TACAGAGTTC	CCCTAGTTCA	CCCAGGGGGG	AACCTAGCCT	GTGGGGACGA	CCCCAGATCC	83160
	CTTCTGGGCT	TGGTACTCAC	TGGGATATCC	TCATGCCTGC	ACCCAGCCTA	CGGCTCTGAG	83220
	CTCCTGAGTG	GGGCTTTGGC	CTGCCCCGCA	CTGTTCCAGC	CCCCATCCAG	CAGGCTGGTG	83280
	TCTCCTCTGA	TGCCCCCAGC	ACCCAGGCGT	GTACCTGCCT	GGGTTTTCCT	GCCCTGGTCT	83340
20	GAGGTGGGTG	AGGCTTGGCC	TCCCTAGCCA	GCCCTGCCCC	CCCACCCCAG	GGAACCTTTC	83400
	AGATGCTCCC	GACCAGCTTT	GTGGCTCTAC	ATCTCTTCAT	CAGGAAGAAC	GGCGCCGGAT	83460
	CCCAAGCTGA	CCGTGTCCAC	GGCTGCAGCC	CAGCAGCTGG	ACCCCCAAGA	GCACCTGAAC	83520
	CAGGGCAGGC	CCCACCTGTC	GCCCAGGCCA	CCCCAACACG	GTAGCTGACT	CCTGAACCGT	83580
	GTGCAGCCTA	CGACTTGGTG	GGTCCCTCAG	TGGCTTCACG	AGGCTAACTC	TTGAGTGTGG	83640
25	CCGGGGCTGC	CCCTGTGGGG	AGCCATCTCA	TGGTGGGGAC	TGCTCCCGGT	TCTGCACCCC	83700
	GCAGTTGTCC	TGAGCAGCTC	TCCAGGAGTT	CCTGGAGGAA	GGGCGGGCAG	GGCGGTGGGA	83760
	CTCTCAGTCC	TCCACCCCAG	CGCCACTCTG	AGCCATGCTA	CTCCCACACC	AGGAGACCCT	83820
	GGCAGCCAAC	CACAGTGGGG	GTCTGGAGTG	CCCAGAGCAG	GGAAGCAGGG	CCAGCACGCC	83880
	GTGAGCGCCT	ACCTGGCTGA	TGCCCGCAGG	GCCCTGGGGT	CCGCGGGCTG	TAGCCAACCT	83940
30	TTGGCAGCGC	TGACAGCCTA	TAAGCAAGAC	GACGACCTCG	ACAAGGTGCT	GGCTGTGTGT	84000
	GCCGCCCTGA	CCACTGCAAA	GCCAGAGGAC	TTCCCCCTGC	TGCACAGCAA	GTGGCCCTGG	84060
	CGTGGGGAAC	AGCCGGTGGG	GTGGGGGGCA	GGGGACAAAA	TGGGGGCTGT	GCCGGGTCTG	84120
	ATTGAAGCTC	CCCGCAGGGT	TCAGCATGTT	TGTGCGTCCA	CACCACAAGC	AGCGCTTCTC	84180
	ACAGACGTGC	ACAGACCTGA	CCGGCCGGCC	CTACCCGGGC	ATGGAGCCAC	CGGGACCCCA	84240

	GGAGGAGAGG	CTTGCCGTGC	CTCCTGTGCT	TACCCACAGG	GCTCCCCAAC	CAGGTAGGGC	84300
	ACCTGCCTGG	CTGCTCCTGG	CAGCGCCCCA	ACCGCACGCA	GCCCTGGGAG	TGAGCAGCAA	84360
	AGCCCCAGGC	CCCCCTCAGA	CTCAAGTCTC	TGTCTCCAGG	CCCCTCACGG	TCCGAGAAGA	84420
	CCGGGAAGAC	CCAGAGCAAG	ATCTCGTCTT	TCCTTAGACA	GAGGCCAGCA	GGGACTGTGG	84480
5	GGGCGGGCGG	TGAGGATGCA	GGTCCCAGCC	AGTCCTCAGG	ACCTCCCCAC	GGGCCTGCAG	84540
	CATCTGAGTG	GGGTGAGCCT	CATGGGAGAG	ACATCGCTGG	GCAGCAGGCC	ACGGGAGCTC	84600
	CGGGCGGGCC	CCTCTCAGCA	GGCTGTGTGT	GCCAGGGCTG	TGGGGCAGAG	GACGTGGTGC	84660
	CCTTCCAGTG	CCCTGCCTGT	GACTTCCAGC	GCTGCCAAGC	CTGCTGGCAA	CGGCACCTTC	84720
	AGGTTGGTGC	CTGGCCACTA	CAGTTCCTGC	TGGGTGTAGC	CCCAGGTGAT	GGGCTGAGGG	84780
10	GGAAAGGGCA	GGCCCTTGTC	CTGGTGGCAA	CGCCTGGCAG	ACGTGTGCAG	TGGGCCGGTT	84840
	GTCTCACAGG	CCTCTAGGAT	GTGCCCAGCC	TGCCACACCG	CCTCCAGGAA	GCAGAGCGTC	84900
	ATGCAGGTCT	TCTGGCCAGA	GCCCCAGTGA	GTGCCCACGG	AGGCCCCCAG	CACACCCAAC	84960
	GTGGCTTGAT	CACCTGCCTG	TCCAGCTCTG	GTGGGCCAAG	AACCCACCCA	ACAGAATAGG	85020
	CCAGCCCATG	CCAGCCGGCT	TGGCCCCGCTG	CAGGCCTCAG	GCAGGCGGGG	CCCATGGTTG	85080
15	GTCCCTGCGG	TGGGACCGGA	TCTGGGCCCTG	CCTCTGAGAA	GCCCTGAGCT	ACCTTGGGGT	85140
	CTGGGGTGGG	TTTCTGGGAA	AGTGCTTCCC	CAGAACTTCC	CTGGCTCCTG	GCCTGTGAGT	85200
	GGTGCCACAG	GGGCACCCCA	GCTGAGCCCC	TCACCGGGAA	GGAGGAGACC	CCCGTGGGCA	85260
	CGTGTCCACT	TTTAATCAGG	GGACAGGGCT	CTCTAATAAA	GCTGTGGCA	GTGCCCAGGA	85320
	CGGTGTCTTC	GTGGCCTGGG	CTTGGTGGTG	GGAGTTGAGG	GACAGGGAGT	TGGCAGAGGC	85380
20	CCCTCCCAGC	CTGCCATGTG	ACACTGTACT	TCCTCCACGG	TGGGCTCAGC	CCTGCCCTCA	85440
	TCCTCACAGC	CGCAGCCAAG	CTGCAGTTGG	TAGGGGATCC	ACCGACACAC	CAGGCTGCCT	85500
	GGGCTGGTCT	CTGGGTGGG	AGCTGCCCCA	GGTGCTGAGG	AGGGCAGCTC	CCTGGCTGGT	85560
	GAGGCCCCCT	CCAGAACCAC	CCTTGGA CTG	AGCTGTGGGG	AGGGATGGTA	CCAGGTGGGT	85620
	GAGGGGGGCT	GCCTGGGGAG	GGAGGGGTTC	CTATGGGGCG	TGGCGAGGCT	GGCCCAGCCC	85680
25	TCTCCCCGCC	CATATATGTA	GGGCAGCAGC	AGGATGGGCT	TCTGGACTTG	GGCGGCCCTT	85740
	CCGCAGGCGG	ACCGGGGGCA	AAGGAGGTGG	CATGTCGGTC	AGGCACAGCA	GGTCTCTGTG	85800
	TCCGCGCTGA	GCCGCGCTCT	CCCTGCTCCA	GCAAGGACCA	TGAGGGCGCT	GGAGGGGGCA	85860
	GGCCTGTGCG	TGCTGTGCCT	GGTGTGGCG	CTGCCTGCCC	TGCTGCCGGT	GCCGGCTGTA	85920
	CGCGGAGTGG	CAGAAACACC	CACCTACCCC	TGGCGGGACG	CAGAGACAGG	GGAGCGGCTG	85980
30	GTGTGTGCCC	AGTGCCCCCC	AGGCACCTTT	GTGCAGCGGC	CGTGCCGCCG	AGACAGCCCC	86040
	ACGACGTGTG	GCCCGTGTCC	ACCGCGCCAC	TACACGCAGT	TCTGGAACTA	CCTGGAGCGC	86100
	TGCCGCTACT	GCAACGTCTT	CTGCGGGGAG	CGTGAGGAGG	AGGCACGGGC	TTGCCACGCC	86160
	ACCCACAACC	GCGCCTGCCG	CTGCCGCACC	GGCTTCTTCG	CGCACGCTGG	TTTCTGCTTG	86220
	GAGCACGCAT	CGTGTCCACC	TGGTGCCGGC	GTGATTGCCC	CGGGTGAGAG	CTGGGCGAGG	86280

	GGAGGGGCCC	CCAGGAGTGG	TGGCCGGAGG	TGTGGCAGGG	GTCAGGTTGC	TGGTCCCAGC	86340
	CTTGACCCCT	GAGCTAGGAC	ACCAGTTCCC	CTGACCCTGT	TCTTCCCTCC	TGGCTGCAGG	86400
	CACCCCCAGC	CAGAACACGC	AGTGCCAGCC	GTGCCCCCA	GGCACCTTCT	CAGCCAGCAG	86460
	TTCCAGCTCA	GAGCAGTGCC	AGCCCCACCG	CAACTGCACG	GCCCTGGGCC	TGGCCCTCAA	86520
5	TGTGCCAGGC	TCTTCCCTCC	ATGACACGCT	GTGCACCAGC	TGCACTGGCT	TCCCCCTCAG	86580
	CACCAGGGTA	CCAGGTGAGC	CAGAGGCCTG	AGGGGGCAGC	AACTGCAGG	CCAGGCCCAC	86640
	TTGTGCCCTC	ACTCCTGCCC	CTGCACGTGC	ATCTAGCCTG	AGGCATGCCA	GCTGGCTCTG	86700
	GGAAGGGGCC	ACAGTGGATT	TGAGGGGTCA	GGGGTCCCTC	CACTAGATCC	CCACCAAGTC	86760
	TGCCCTCTCA	GGGGTGGCTG	AGAATTTGGA	TCTGAGCCAG	GGCAGAGCCT	CCCCTGGGGA	86820
10	GCTCTGGGAA	AGTGGGCAGC	AATCTCCTAA	CTGCCCAGG	GGAAGGTGGC	TGGCTCCTCT	86880
	GACACGGAGA	AACCGAGGCC	TGATGGTAAC	TCTCCTAACT	GCCTGAGAGG	AAGGTGGCTG	86940
	CCTCCTCTGA	CATGGGAAA	CCGAGGCCCA	ATGTTAACCA	CTGTTGAGAA	GTCACAGGGG	87000
	GAAGTGACCC	CCTTAACATC	AAGTCAGGTC	CGGTCCATCT	GCAGGTCCCA	ACTCGCCCTT	87060
	TCCGATGGCC	CAGGAGCCCC	AAGCCCTTGC	CTGGGCCCCC	TTGCCTCTTG	CAGCCAAGGT	87120
15	CCGAGTGGCC	ACTCCTGCCC	CCTAGGCCCT	TGCTCCAGCT	CTCTGACCGA	AGGCTCCTGC	87180
	CCCTTCTCCA	GTCCCCATCG	TTGCACTGCC	CTCTCCAGCA	CGGCTCACTG	CACAGGGATT	87240
	TCTCTCTCCT	GCAAACCCCC	CGAGTGGGGC	CCAGAAAGCA	GGGTACCTGG	CAGCCCCCGC	87300
	CAGTGTGTGT	GGGTGAAATG	ATCGGACCGC	TGCTTCCCA	CCCCACTGCA	GGAGCTGAGG	87360
	AGTGTGAGCG	TGCCGTCATC	GACTTTGTGG	CTTCCAGGA	CATCTCCATC	AAGAGGCTGC	87420
20	AGCGGCTGCT	GCAGGCCCTC	GAGGCCCGG	AGGGCTGGGG	TCCGACACCA	AGGGCGGGCC	87480
	GCGCGGCCTT	GCAGCTGAAG	CTGCGTCGGC	GGCTCACGGA	GCTCCTGGGG	GCGCAGGACG	87540
	GGGCGCTGCT	GGTGCGGCTG	CTGCAGGCGC	TGCGCGTGGC	CAGGATGCCC	GGGCTGGAGC	87600
	GGAGCGTCCG	TGAGCGCTTC	CTCCCTGTGC	ACTGATCCTG	GCCCCCTCTT	ATTTATTCTA	87660
	CATCCTTGGC	ACCCCACTTG	CACTGAAAGA	GGCTTTTTTT	TAAATAGAAG	AAATGAGGTT	87720
25	TCTTAAAGCT	TATTTTTATA	AAGCTTTTTC	ATAAACTGG	TTGTAGTTGC	ACAGCTACTG	87780
	GGAGGGCAGC	CGGGGACACC	TGAGCCGCCC	GCTGTGCCCA	GATCCCTCAG	GCTGCCTGCC	87840
	ATCAGAAGCT	CTGCCCCGGG	CTTCCCTTAC	CTCAGACAGA	CCCTCCCTGG	GAGGATCAGT	87900
	GGGGAGTGCC	ACCTCTGCCC	CCAGTGGCTG	TGGCACGTGG	CAGGGGCCCC	TGAAGCTCAG	87960
	CGAGGGTCAG	GGCCTGGGAG	GGTATCATTG	CTGGAAGAAC	AGGATGGGGC	TCAGGCCAGC	88020
30	CCTAGTCGCC	GGGGCCCACA	CTAACCCCCC	ACTTATGAAT	TCCTCCCACT	CCCAACTCAC	88080
	AGGGGATTTT	CCGAGAGGGG	ACCTGCCAAA	GACCTCCTCC	AGGCCTCCCA	TGCTTCCCGG	88140
	GAAGTGAAGC	TTCTCCCCCT	CTGGGGCAGG	CTCTGAAGCC	TCCCGATGCA	CCCAGAGCAA	88200
	CCAGGGGGCT	GCACCAGCCA	CTCGCCTCCC	CAGCACGGCC	AGGTTCCCGG	GGCTGGAGGT	88260
	CCCCCCCAGG	TCCTGGGAAC	CAACCTGCAG	AACACACACA	GGGTCCCTTG	GAGAGGACGC	88320

GGGGACTTCC AGGGCCCGAC TCCTGTGAGT CACAGCCCCG CAGCTGCTGC GCCACCCCCA 88380  
 CCCTGACTCA TGCCCTTCC CAGCAGCTCC TCCCAGGACC CCATGTCCTT CCCACATCCG 88440  
 CAGGAAGGGA GTGCCTGGAC TCTCCAGGCC CACCTGGGGA GCCCCTCACC TGCCCACCAG 88500  
 CCCCTGAGCA GCCCAGTAAC ACCATCACCG TGTCCAACAG CCAGGAGCCT CCACCCTCCA 88560  
 5 GGAGGGAAGG GATGGACAGA GCCACACTCG CCGTCTTTAT TTTGCACTCA CCCTGGGTGA 88620  
 CACTGGGCAG GCCGCTCCTG CCCACAGCCA GACTGAGGAA GAACACAGCA CTCGGCAGGC 88680  
 CCAGTGGGGT CCGTGCAGGG AGGACCCAG GACCAGCCTT ACTCCCGAGC AGGGGACACA 88740  
 GGGCCCCACA GAGAACCCCT CCGGGAGGTT CTCTCCTGGC TGGGGGAGGG CTCTGGACCC 88800  
 CCACAAACAC TCCCAACTT GCGGGGCTGG GGCATAAAAA CAGCCACTCC CAGCAGGCCC 88860  
 10 CCTCAGCTTT TTGCATCAGT CAGCTCCCTC CCGGGGGATT AGGGTGAGGT GAAGCCAGGC 88920  
 CCAGGCGTGG GGTATAGGTC TTCCCCGCA GGCCTCAGCC CTGTCCCGAG GCTGCATCAC 88980  
 AATCCAGGCG CCCCCTGGC CTTTGGGAAC ATGGCCTGGG TCTTCCTCAA GGCAAGATCA 89040  
 GCCCCAGACC ACTTCCGGGG TCACGGGGTC ACAGGCAGAG AGCCAGATGG CAGCCATGGC 89100  
 TGACGGGCCT CCTCCTCGAT GGGGCGGAGA CAGCCACGGG GTCTCCCGAG GGTCCACAG 89160  
 15 GGCTGTCTCT ATGCAGCCCA AGCCAGCCTG AGCACTGGAG CCCCATTCC CAACCAGGTC 89220  
 TCCCTCAGAC CCCCCAGAAA GGGCCTCGAA AGGCCGCGC TGCGCCCTGT GGAAAGGCTG 89280  
 CCGCTGCAGG GCCTGGGCCA GCCGGGCTGC CAGACTCCCC TCCAAAGCCT CCGGATGCCT 89340  
 ACGCTTTTCC AGACATAGAG GAAAGTTTGT CTTTCAGAAA ACAAAGTAAA TAGAAGAACC 89400  
 CCAAAGCAAA GCAAACCCAC CCCCCAGATC AGCAGCATGG GAGCCAACAG GAGGCCACTC 89460  
 20 CTCAGCACC AGGGGACCAG CCGTCCCGAC GGCAGCGCGG CTGCGCCTAC GTGATGTCCC 89520  
 TCTGCCGCGG CGGCCGGTGC ACATTCGCA CGACACACTT CACCATCCAC TCGATGCCCT 89580  
 CGCGCACCCC TTTGCTGTGA AGACAGCGGG TGTGAGGCGG GGGGTCTCGG TCCCCAAAGC 89640  
 CCCCAGAGT GCAGCCCCCA CTCACCCTGT GAGGGCCGAG CAGGCCTGGG TCAGGCAATC 89700  
 GCGCCTGCCG ATCTTGCTGG TGCAGTCGCT GAAGGCCGTC TTGATGTCAG GGATTGAGAG 89760  
 25 GCACGTCTGG GGGAGGTAAG GCCGTGAGGA GCAGCCCCCA CGTCTGGCCC TGTCTGCCT 89820  
 GTGGGCCCCG GACTCTCAGA AGGGCGTATG CCCTTACCC CAGGGAAACA GCCAGAGCTC 89880  
 CACCAGGGTC CCAGTGTCTC CCACAGAGAC CACAGCAGTG AGGACCTGT GCTCAGCCCG 89940  
 AGGCTGAACA TGGCTGGTAG TGCCTGAGAC AACTAGACG TCCACACGGC TCCAAGGAGT 90000  
 CCACCCCCCA TCCCTCCCT GGGGGACACC CTGAGCCCCG AGGTGGGGCG CTGAGGACTG 90060  
 30 AGGCCTCCTG GGCAGTGGCG GAGGCAGGTC CCAGGGGCCC ACACAGCCGG GGATGATGGA 90120  
 GAGGTGGGAG CCCTGCATCA GTGATGGGG CAGTCTGCAG TCATGGTGGC TTCTGCTCAC 90180  
 AACCACCTGC CCAGTCTTCA AAAAGCAGCC CTCCCTCCC CTTTTCTCC GAGGGGAGAC 90240  
 CCCTGCCCCG TACCAGATGT CCCTCTTGTC GGCTGAGATT GTAGGGGAGG CCAGCCTTAC 90300  
 AGGCTGGGGG CAACAGAGCC ACCCCAGAGA AGGCAGGAAG TGAAGATTCA CCCGGCCCTC 90360

TGGACGCCGG GCTGCTTCTG TGCAAAGCCA CTCCAAGAGA ACAGCTAGAA CTCAGCGTGG 90420  
 CCAGTGCTCC CGGGGGCAGT GGCACCTCAG AGGGGTCTTG AGGGGCTGCC CTGGGGGTGG 90480  
 GGCTGGCACA GATGCCACCT CCAAGGGTAG CAGGAACAGG TAAGGGTCAG AGCTGACTCC 90540  
 CACCAGGGCC CCAGCATCAC TTCTTTGAGC TCTGAGTTTC ACCTGGGTGT CCCACAGCT 90600  
 5 TGGCCACACA CTCCTGAGAC ACGGCCGCCC TCCTGGGGAG AGGTGCCCTG CATAGCAGGA 90660  
 AGAGGCCTCT GGGCGCCTGC CCTGAGGTGG GAGAACCTCC AGGGCTGGCA GCAGCAGGTC 90720  
 TGGAGAGGAA CCAAGCTTGG GAAGCTGCTG GGGGCAGGGC AGGCCTTGAG AATGGCTCTG 90780  
 TACCCCTTGG GCAGTCACTG GGCCTGGGGT GTCTGGGTGC ACACCTACTC CCCTTGCTGT 90840  
 GGGGGAGGCT GGGGACTCGG GAAGCTGCTG CGGGAGGCAG GGGTGGGGCT CACCTCCACA 90900  
 10 TCCTGCTTGT TGGCCAGCAC CAAGACGGGG ACACCGCACA GCGCCTCGCT GGTACCACC 90960  
 TTCTCTGGGG AGGGCAGGAG AGGCAGCGCC TCACACCCAG CATCCTGCCT CTGACTGCCC 91020  
 AGGGGCCCCAC AGGCGTGGAC ACTGTGACAG CCACTCCCTC TGCCCCCCCC CCGTACCCCA 91080  
 CTAGGCAGGA GCACTTCTGA CCAGACACTG AGCCTGCCCC AGGCACAGAG CTGCCCCAAGC 91140  
 TGGACCTGCC CCCACTCACC ATCCATCCCT CCCAGAGCAG CCAGGCCGCA CTCACCAAAC 91200  
 15 GCCTGCTTGG ACTCAGCCAG CCTCTCCTCG TCGGTGGAGT CAATGACGTA GATGACGCCG 91260  
 TGACACTCCG CATAATACTG GGAGGAAGCA CCAGGAGTTG GGGCTCAGTC CCCACCCTGC 91320  
 CAAGGGCCAG CAGAGCCAGG CCTGTGTCAT GGCCACAGTG AGGGGCTCAC ATGAGGAAGG 91380  
 GGCAAGAGGG CAGCCCCCAA CTGCAAGACC CTTCTGGGAT GCATTCTGGG GTTGCGGGGA 91440  
 GATCTGGTGG AGGTGTCCCC AGACGCTGCT CCTGAGAACC TGCCGGCAAC CTTTGGCCTG 91500  
 20 ATGGTGGCCA AAGGTGAAAG ACAGGGATTG GGCCAGGCGT GGTGGCTCAC ACTTATTATC 91560  
 CCAACACTTT GGGAGGCAGA AGCAGGAGGA TCACCTGAGC CCACTTCAGC GCCAACCTGG 91620  
 GCAACACAGT GAGACTCCGT CTGTACAAAA GCTTATGGTA ATGTGCGCCT GCAGTCCTAG 91680  
 CTACTCGGGA GGCTGAGGTG GGAGGATGGC TTGAGCCTGG GAGGTTGAGG CTGTAGTGAG 91740  
 CTCTGATCAC ACCACTGCAC TCCAGCCTGG GTGAGAATGA GAGACCCTGT CTCAAAAAAA 91800  
 25 AGATAGGGTT TGGGGGCTGG AGGAACCTAG ACCACAGCCT GGCCCGTTGA GGGAGTGAC 91860  
 CTGTGGGGCT CTGTGCCAGC ACCTCGCACA GGGAGGGAGT GTGGCCATGC GGATAAGACT 91920  
 GACCAGCACC ATCTACGAAG CGAGCCTTCC CTGCCAGGAC AGGGCCAGAG TCACTGAGCT 91980  
 CAGACCTCTG CAGCCTGGGC TGGTCAGTCC TGGGCTCGCT GGCAACACTC CTGGGCAAGA 92040  
 CAGGGCACAG CCCCTGCAGC CTCAGGTACA AGTGCTGAGC CCTGGACCAG ATGAGTGAC 92100  
 30 CTCTATCTCA ATCAGAAAAA AACACAGCAA ACTCCGCGTC CACGTGGAGC AGACAACAGC 92160  
 TCACATTTGC CACTTTGCCT CCAGGCTGTG CCAGCTCTCC TGTCCAGGCA TGAGTGCCCA 92220  
 GAGACCTAGA ACTGGATGCT GACCAGGTAG GACAAGCTGG TGGTCAGTGT GTTAAGACAC 92280  
 ACACACCCGA GAGCATGAGA AGCCAGGAGG CACAGCCCAA CTCTCCGAAA TCCTTAGGGT 92340  
 GTCTGAGCAG GGAGTACCAG ACAACCCCAT CCCAGTGCCA GACAAGCTTG TGCACCTGCA 92400

CTTCCACAG AGGAGAGAAG CCTGTGCACC TGCACCTCCC ACAGTGGAAG GGAGGAGGCC 92460  
 CAAGGCCAGG CCCCCCACC CCCAGGAAGT TCCCACAGTG GAGAGGAGGC CCAAGGCCAG 92520  
 GCGCCCTCCA GGGTTCTGCA GGTAGCGAGG CCCCCCACC CCCAGGAAGT TCTCTGGCCT 92580  
 ACAGACAGGT CCCACACAGA GGCCGCCAAC CCTCAAGGG ACCCTGCAGT GTGCCGGCTG 92640  
 5 TCTGCTGCTG ACACAAGGGA GCAGGCGGAC CCTAAGGTGG AGACCTCTGT GGCAGGAGGG 92700  
 GCGGCTCTGT GGAGGCTGCA GCAAGCCCAG TGAGAGAATC TCCACGTGGC TCCTGGGGCT 92760  
 TCTGAGCAGG GTGGCAGAAG GTTCATGTGC AACCGGGTCC TGGACCATGG GACCACGTGG 92820  
 CCAGAGCCAC CCATCACACC TACCAGGCAC AAGGTGCACA GCCCAGCAGG GCCGCAGTGG 92880  
 ACGGGAGCGA CACCTCAGGG CTGAGTGCGG GCAGGACCCA GAGCCCCACG CCCAGTGA 92940  
 10 GCGCTCACAG CAGTGGTCAT TGTGGGGTGC CCCACAAGGA GGGGGAAGAG GGAGGTGTCC 93000  
 CAGCGTGGCT CCTGGCTGGC CAGCTGACCC CAGTGGAGCA GTCAGAGGGA CTGTGGGTCT 93060  
 GAGTTTTTCT CCCCAGCAGC AATGGGAGCT CCCCAGTGC AAAGTGCCAG CCAGCCTGAG 93120  
 AGACTAGTGT TACAGCAAAG AACCCAGGAG CTGAGGTCTT GGCACATGCC ACACATGTGG 93180  
 ACACCAACCC AGGGTCCAGC CCCAGGACGA GGCCAATTCT CAATGACGCC CCTTTCTGTG 93240  
 15 GTGCTGGCTC TGCACAAGGA TGCAGGATAC AGGAACCAGG GTGGGAGCAG GGGCCTCCCT 93300  
 TCCGGTCCCT CCCAGTGACC TAGGGGGGTC CCTGCAGCTG ATCCTCCAG CTCTGAGCTC 93360  
 AGCAGGGTCA GGGGTCCCGG CCACTAGAGC AGCACATACT CAGCAGACAC GCTGAATGAC 93420  
 GAGCCACAGC TGCCTCATGG GCATGACTTG CACCTCATGT CTAGGAGACC CTGGTGGGCA 93480  
 GGAGATGGGG CTGCCATCCC ACAGCTGTCC CACAGCTGGG GACCCAGGGA GCCACTGGCC 93540  
 20 CCACCACGGT GGTGTCTGGA GAAGGGCTCA GACTGCCAGG AAGTCGCACC CCAGCAGAAG 93600  
 TGGTAGTGAA TTGGGAGGGC ACTCAAGGAA GGGCTGTGCA GCCCCAAGAC CAGCAGCAAG 93660  
 GATGGGCTAC AGTGGCCCCC TTAAGTCTCC CTCTTCCAGT TTCGCCTTAA GAGAGGCCCT 93720  
 CAGGACCTTG GAGGAACCCC TCTCCAACGT GGAAGTGTGG GTCCACATAG GGCTGCAGCT 93780  
 GTGGCCAGTG CAGGCATCTC TGGCCCCACT GTATTCTTGC TTCATGTTGG AGAACACTGC 93840  
 25 ACCAGCAGAT GGTCTCATTT TGGTTTCTGT GGGACCCACT TTGGCTGCAA AGAGCCACAC 93900  
 TGCCAGGTCA CACCTGCCCA GGGCAGCCCA CACTGGGGAC CCACCAGGCC ATGGTGTGAA 93960  
 GTCCCGGCCA GCCTGGCCCC ACATGGCACA GCATAGCCAG TTCTCCTCCA GGGCTCCCTG 94020  
 CTGGGCCAAC CACAGCTCTG CGGATCCTGC TGCCTGAGTC GACCTCTCCT CTCCCGTCTT 94080  
 CCCTGCCTTC CTGGTGCCGA CCCCAGTGT GCATCCTGTA CCTCGACCTG TCTCAGCATC 94140  
 30 TGTGCCTGAG ACACCGGCCT GTGACAAGAT CATCATCATC TGTGTCACTC CCCAAGCATG 94200  
 CTGCGCACTG GACACACAGG CCCTGACTCA ACTTGTCTCT TCTGACTTCA GTGGTCTTAC 94260  
 AGGATCTATC AGAGATCACT TGGCCATGGG AGAAATGTCT TCTTGGCTAG AAGTCACAGC 94320  
 AGGAGGGGAC ACTTTGGGGG CGCCTAGGAA AGGGGAAC TA GGATCAAAAA AGAGATCAGG 94380  
 ACCTGGGCAC TCAGCTCTAG AGATGGCATC AGGGCAGCCA AGGCACTGGG GACACCCAC 94440



	ACCCACTGTG	CCAGCCTAGG	GCAGGGAGCC	CGAGGAAGCC	ACAGGCTCTG	CCCTGCTCAG	94500
	TGCTGGACTC	AGTGCCTGGC	CCAGGCTGAG	AAGGAGATAA	ACTGCAGCCT	TGGGGGTGTG	94560
	GGGAAGGGGC	ACCACACTGG	GATCTCAGAA	ATGCCCAAAA	CCTGTGTCAA	AATAGGAGAC	94620
	TGCCGCTGTG	AGACCCTGAG	GAGTCTTCTG	GTGATCATGG	AAGAACAAAT	GTTAAGCTAG	94680
5	AACTGAAGGA	ACCTCATCAG	GGGAGAGGCA	GCCATCCTGC	CGTCCCCACA	TCTGGTCTTT	94740
	GCCATTTCTG	TGTCCTGTGG	TGGTCAGCAG	CAAGGTCTCT	GAGCCGAAAG	GAGGCACTCA	94800
	CTTTGGAGGA	GTGCAGGGTC	CCCAGGTCCC	CACACTTTGT	CTTGTCTCTG	CTGAGAAAGA	94860
	AACAGACTGC	CCTGACCTCT	CTGACTTGGC	CAGCGAGGTT	GCCCTTAGGC	TCAAACCCAA	94920
	GCCAGGGTTT	GAACATTCCC	AGACACTTGT	AAGATGTTTA	GGTTGTAAAC	ATAATGTTCA	94980
10	GGTTTCAAAA	CATTGAAAGA	AACTAGCCCC	AGCCCTGAAC	CCAGATCCCC	CCCGGCTTCA	95040
	GGCATGACCA	GTGAACACGC	CCTTCTCTCA	CTGGTCACCT	GAGGATGCCG	CACTCTGTCA	95100
	ACAGGTTCCC	CTAATACATG	CTCTGATCTG	ATCGCCTTGG	CATTTAGTGA	TTCTTTCCCT	95160
	GGAATTCTCC	ACTGGCCCCA	TCGAGGGGAA	CTCCCAAGTG	GGAAACTCCC	CTACCACCAC	95220
	TTTGGGGGCA	ACTTCAGCTA	AGGGTTCAGC	TGGGACAAAA	CAGGGAGCCA	CTCGGGAACC	95280
15	TGGGACAGGA	CCAGAGAGAA	AACCCGAGGG	ACAGAGTGGG	TAAGGAAAGC	TGCTGAGGAA	95340
	GGGCCCCAAG	GGCACTCTGG	AAAGAAGTGG	CACTGGAGGG	CTGGGGTGGG	GGTGGTCCTG	95400
	GCCAGGGAGT	CTTACCTTGT	CCCACAAAGA	CTGCAGCTCT	TCCTGCCCTC	CTAAGTCCCA	95460
	GAACATGAGC	CGAGCCTTTC	CCACATCCAC	AGTGCCGACT	GGGGAGAGGA	GGAAACAGGC	95520
	AAGGCTCATG	ACCTTGGTCC	TCGACACACC	CAGTCCCAGC	TCTCCCAGGG	GATGGGGCAA	95580
20	ACCATGCTGG	TGCCACTCAA	ATGAGACTTG	AGAGGGGCCC	GACAGGGCTG	TGGCCACGGG	95640
	CCAGCTGGAC	TGTGAATATC	ACGGCATCCT	CAAGGCCCCA	AACCCACAGC	CTGCTATTGA	95700
	GACCCTTACT	GTTTAGGCCC	ACGGTGGTGG	TGATTTTGGA	TAGACTCATC	CCCTTGTAAGT	95760
	TCTTGTTAAA	TCGGGTTTTC	GACTGCTCCA	GGAAGGTCTG	AGGAGAGAGG	CAGAGGCGAA	95820
	ACACATCAAG	GAGGGGCTAT	ACTGGCTTCC	AAATATCCTT	ACTCAGGTCT	GTTCTTTAAA	95880
25	AGACAGAAAC	AGAAACAGAG	CAACACTCTG	CTCTTCAGGA	GGCTGGTGGT	GACTATCCTG	95940
	CCGTCTCAGG	TGAAATTTGG	CTTCCGTCTG	GGTAGTGAAC	GTGCAGCTGA	CAGCACAAAA	96000
	CCGAAGGGGG	CGCCGCCAGG	CCGTGGGAAA	GGTGCGCGCA	AGGGCGTGGG	CACTCACCCT	96060
	CTTCCCAGCA	TTGTCCAGGC	CCAGGATCAG	GATGCAGTAC	TCGTCCTTCT	GAAACATGTA	96120
	CTTGTACAAG	CCCACAGCA	GCGTGTACAT	CCTGCCCTGG	GCACCCCAAC	ATAGGTCAAGT	96180
30	GTGCAGCCAG	AAAGCACCTC	CCCTCCCCCG	GGCTTCTCCA	CGGTGGTCAG	TGGCGCCCCA	96240
	CGTCCAGCCG	ACCGCTCAGG	ACGAGAGCCT	GGGGGCCATT	CCCGACTCCT	CGTCCCTCTC	96300
	CCACCCCGTC	CCTCTGTAAC	TTCTCCAGG	TCAGCCGCCA	CTGTGTCTCT	CTCACAGCAA	96360
	TGACTGCGAC	CTCTCCGCAT	ACACATCGGT	TCCGGCCCCCT	CCCCTGCTCG	CGGGACTACC	96420
	CAGCCGGGTG	TTACAGTGA	GCTCAGCCGC	GCTCCCGCCC	TCCCCGAGG	CTTCGCTCCC	96480

ACGCTTCACG CGCGCGGAAC GGGGAACACA CTCGCTGCAG CCCC GCCTGG GCCACGGCAC 96540  
 CCTCGAGCGC CAGCCCCGCG CCCCACCCGG GAGCAGCGAG CCACCGGCGC GCTCCCCAGG 96600  
 AGCCCCCTGCA GGC GCCGGGT AGGGACGCCC CATCACCCCA TTTCTTAAAA CGGGGACGGC 96660  
 CCTGGGGGGA GCGGACTACA GGGCGGGTGA GCAGCGGCGC GGCTGCTCCT GGAGTGCACC 96720  
 5 TGGAGGCGGC GCGCGGCTGG CAGGGAACGA CTGCGAAGGA AGAACCTGGG TCGCGGCCCC 96780  
 CGGCTACGTC CGCCCCAAGC CGCGCCCGCC AGGTCTGAGG CTCCCCGACA AGCAGCCAAA 96840  
 GCTGGCTCCT GTCACACCCG CGTCCCACCT CGAGTCCTGG GCCGCCCTC GGGCCTCGCG 96900  
 CCTCACCGCA CAGCCTGCGG CCTACCTGCG TCCGCCGCGC CCTCGGAGCC GCTGCTGCTG 96960  
 ACCCCCGCTG ACCTCCGCTG ACCCCGCGCT AACCCCGCGC GCGCCTGAC GGGACGCGGG 97020  
 10 CCGGCCTCAG GGAATGAGCT GAACCGCGTC CCAGCGGCTT CCGCGCTCCG CTTCGCGGCT 97080  
 GCCCCCGCGC GCCAAGCACT TCCGGAAGCG GCGGCGCTCG GGAGGAAGTG CCGATCGGCT 97140  
 GCTGGGGCGA AAAGGGGGCG CCGGGCCGCT CTAGCCGGTG AGGCCGGCGG GCTCTCTGTG 97200  
 GCTGCGGCTG GGAAACCGCG CGGAGGAGGT GCCCGGCGG GGACCAGGTG GCCCGGGTTT 97260  
 GCGGGGACGC GGCCCTGGCC AGACAGAAGA GACGCCGGGC GGGGGGGCGC GGCCGGCCTG 97320  
 15 GAAGGCGGCG GCGCGGCGG GTGGGCTCGG CGGAGGGTGA GCGGCGGGG CGCCCCGCGG 97380  
 GGAAGGGGCT CCGGAGTGAC GCGGGACCCG GCTAGCGGCG AGCCACGGC GGCTCGGAAG 97440  
 GGAAGCGCGG AGCCTGAGCG GGGGTACCCG GGCTGCGACC TCTGCGCTGG GAGCTGTGCC 97500  
 TCTGAGCCGG TGTCTCCCG AGGGAAAGGG GACGTGCCCG TGCCCGTGCC CGCCCTCAGG 97560  
 CTGTGGGGTC GGTCCCGAGA CGCGGGGCTC AGCTGGCTTC TCTTCTTGCA GCCCTGGTCC 97620  
 20 AGCGCCTCCC TCTCTCAGCA TGGACGAGGA GAGCCTGGAG TCGGCCTTGC AGACCTACCG 97680  
 TGCGCAGCTG CAGCAGGTGG AGCTGGCCTT GGGCGCCGGC CTGGATTCGT CTGAGCAGGC 97740  
 TGACCTGCGC CAGCTGCAGG GGGACCTGAA GGAGCTCATC GAGCTACCG AGGCCAGCCT 97800  
 GGTGTCTGTC AGGAAGAGCA GGTGTGTGGC CGCGCTGGAC GAAGAGCGCC CGGGCCGCCA 97860  
 GGAAGATGCT GAGTACCAGG CTTTCCGGA GGCCATCACT GAGGCGGTGG AGGCACCAGC 97920  
 25 AGCGGCCCGT GGTCCCGAT CAGAGACCGT TCCTAAAGCA GAGGCGGGGC CAGAATCTGC 97980  
 GGCAGGTGGG CAGGAGGAGG AAGAGGAGA GGACGAGGAA GAGCTGAGTG GGACAAAGGT 98040  
 GAGCGCGCCC TACTACAGCT CCTGGGGCAC TCTGGAGTAT CACAACGCCA TGGTGGTGGG 98100  
 AACGGAAGAG GCGGAGGATG GCTCGGCGGG TGTCGCTGTG CTTTACCTGT ACCCACTCA 98160  
 CAAGTCTCTG AAGCCGTGCC CGTTCTTCCT GGAGGGAAAG TGCCGCTTTA AGGAGAACTG 98220  
 30 CAGGTAAAGC CCTTTGTTGT CAGATGCCAA CCTTAGGGGC GTAAGGGGCA CGCACACAGG 98280  
 GTCGGGTCAG GATCGGCCCT CCCTTTGCTT TGCAGTTTTG TCTCAGCTTC CTGGGGCAGG 98340  
 CGTGCTTTGA CAGCTGTGTC TGTGTTCAAG CGTCTACGTC TTCCTTCTGG GGTGAATCAA 98400  
 GAAGCATGGA AGGAGGCCAG GCGCGGTGGC TCACGCCTGT AATCCCAGCA CTTTAGGAAG 98460  
 CCGAGGCGGG CAGATCACCT GAGGTCAGGA GTTCAAGACC ACGCTGGTCA ACATGGTGAA 98520

ACCCCATCTC CTAAAAACA CAAAAATGAA CCGGTCGTGG TGGCGCGCAC CTGTGGTCCT 98580  
 GGCTACTCAG GAGGCTGAGG CAGGAGAATT GGTGAACCC AGGAGGCCGA GTTTGCAGTG 98640  
 AGTGGAGATG CAGCCACTGT ACTGCAGCCC GAGCAGCAGT GCAAGGCTTA TGTGGAAGAG 98700  
 AGTAGGTCTC CAGCCTATCG TCAGTTTTTT TTTGGTGGTT GTTTAATTT TTTTGTAGAC 98760  
 5 AGGGTCTTAC TTTGTCAACC AGGCTGGAGT GCAGTGGCAT AGTCCTGGCT CACTGCAGCC 98820  
 TGGACCTCCT GGGCTCAACC GATCCTCCTG CCTCAGCCCC CCTAGGAGCT GGGCTACAGA 98880  
 CTCACGCTAC TACACCCAGC TAATTTTTAT ATTACTATAA TTTTTTATCT TTTTTTTGAG 98940  
 ACGGAGTCTT GTTCTGTTGC CCAGGCTGGA GTGCAGTGGC GTGATCTCGG CTCAGTCAA 99000  
 GCTCCGCCCT CCGGGTTCAC GCCATTCTCC TGCCTCAGCC TCCCGAGTAG CTGGGACTAC 99060  
 10 AGGCGCCCCG CACCATGTCT GGCTAATTTT CTGTATTTTT AGTAGAGACG GGGTTTCACC 99120  
 ATGTTAGCCA GGATGGTCTC AATCTCCTGA CCTCGTGATC CGCCACCTT GGCCTCCCAA 99180  
 AGTGTGTTGA TGACAAGCGT GAGCCACCGC GCCTGGCCTT TTTTTTTTGG AGACAGAGTT 99240  
 TCACTCTCCT CACCCAGGCT GGAGTGTAGT GGCCTAATCT CAGCTTACCG CAACCTCTGT 99300  
 CTCCCGGGTT GAAGTAATTC TCTACCTCAG CGTCCAGAGT AGCTGGCATT ACAGGCGCCC 99360  
 15 GCCACCACAC TCGGCTAATT TTTTGTATTT TTAGTAGAGT CGGAGATTCA CCATCTTGGC 99420  
 CAGGCTGGTC TTGAACTCCT GACCTCGTGA TCCACCCACC TTGGCCTCCC AAAGTGTCTG 99480  
 GATCACAGGC GTGAGCCACT GCGCCTGGCC CTGTTGTAGT TTTTATTCTC TAGAGTTCAA 99540  
 CTTTTAAATT TTACTTTCAT GGAGATTTTC AAACATACCC CAAATTAGAG AGTTTAGCAT 99600  
 AATCACCGCC CACGGTCCAT CATCCAATGT CGTCATTTAT TAATATTTTC CCAGTCTCAT 99660  
 20 TTTGTCTGTT CTCCCTGCCC TATTTTTTTC TTTCTGGGC CATTTTAAAG CAAATTCAG 99720  
 AAGTTACTGG TTTTTTCCAA TTATGAATAC TTCATAGTTG CATCTCTAAT CTAAGTATT 99780  
 AGGAAATTAC TTAAAAAGTA ACTTTTTGGA AGTCCAAGTC CGATGTGAGG AAAAAAAGA 99840  
 GTAACCTCTG TGTCATAATA GGTAACACAT TTAATGGTAA TACCTCTTCC ATATTCAAAT 99900  
 ATGAACAATT ATTACTGTAA TGTCTCTATT TCCCTAAGCG CATAGCTTTA TTTTCTCTCC 99960  
 25 TTTTTACTTT TCTCTTAGAA GAAATATTTA CCAAGCCTTC TAGTAGGTAA TTTTCTTTTT 100020  
 TAGCCAATAG TTCAGGCTGA CCGTGAACCC ATCCCTAGTT CTAGTTCTAG TTCTTTGAAT 100080  
 GTCTTCTTTT TTTTTTTTTT TTGAAACAGC GTCTTGCTGC TCTGTCACCC AGGCTGGAGT 100140  
 GCAGTGGCAC AATCTCGGCT CACTGCAATC TCCGCTCCC TGGCCCAAGC CATCCTCCCA 100200  
 CCTCAGCCTC CCTAATAGCT GATACTACAA GTGTGCACTG CCACGCCAG CTAATTTTTG 100260  
 30 TATTTTTTGT AGAGACGGGA TTTCACCATA TTACCCAGGT CTCGAATTCC TGATCCCTTT 100320  
 GATGAGAGAT CTGACACATC CCTGTGGTGC TCCCTCTGGA CCAGGCACTG CTCCAAGGGT 100380  
 TTCATATACT TTCATTATC TGTCGAACAG CCCTGTAGGT AGGCCCTGCA GTCACACCAT 100440  
 CTGACAGAGG AGGAAACAGG AGTAGAAGAA CTGAGTGGTC CAGGGCTTCA AGGCTCAGAG 100500  
 GGCTCCAGTT GCCCCAGCC CTCGTTCCGT CCCCTGCTCC ACCCAGTGCT GCTTGCCATG 100560

TCGGCATCAG GCCTGATCTG AAAGCTTCCG GAGCATCTTA CAGACGTCCA CCTTGCCACC 100620  
ATTCAGGACT GATAAGTTCT CTTGGATTTG CGTTGGACCT TTTTTTTTTT TTTAAGATGG 100680  
AGTTTCACTG TTGTTGCCCA GGCTAGAGTA CAATGGCAGC ACCTCCACCT CCTGGGTTCA 100740  
AGGGATTCTC CTGCCTCAGC CTCCCAAGTA GCTGGGATTA CAGGCGCCTG TCACCACGTG 100800  
5 GTGCCCAGCT AATTTTTATA TTTTATAGTAG AGGCAGGGTT TCACCGTGTT GGCCAGGCTG 100860  
GTCTCGAACC CTTGACCTCA GGTGATCCCG CCTTGGTTTC CCAAAGTGCT GGGATTACAG 100920  
GCATGAGCCA CCACACCCGG CCCAGGATTT CTTTATATAT TCTGGATATC ATCCCTTATG 100980  
AAGTATATAG TTGTCAGATA TTTGCTCCCA TTGTTTGGGT TGTCTTTTCA CTTGATATAG 101040  
TGTCCTTTGA TGCACAAACA TTTTAAATTT TGATGCAGTG CAATTTATTG TTTCTTTATT 101100  
10 GCCTATGTTT TTGTCATCAG GTTTAAGAAA CCACCTCATC CATAGTTATG AGGATTTTCA 101160  
CCTATGTTTT CTCTAAGAG TTCTGTAGTT TTAGCTGTTA AATTTAGGTC TTTGATCCAT 101220  
TTTGAGTTAA TTTTGTATA TGTTATTAGG TGAGGGTCCA CTTTATTCTT TTGCATGTGG 101280  
ATTTCCAGTT TTCCAGCAC CATTTGTTTA AAAGACTGCT TTTTCTCCAC TGAATGGTCT 101340  
TGGCACTTTT GTCCAAAATC AATTGGCAAT ATATGTAAGG GTTTATTTCT GAGCTCTCTC 101400  
15 TCCTGTCCA TTGGTGATA TGTGCCAGTA CCACACTGTT CTGATTATTA TAGCTTTGTG 101460  
ATAAGTTTAA AACTCAGGAA GTGGTAGTTA TTCACCATTT GCTCCTCTTT TTCAAGTTTG 101520  
TTTTGTTTCT GGATCCTTTG CAATTCATA TGAATTTTAG GATCGGCTTG TCCAATTCTG 101580  
CATAAAAGAC AGTTTGAATT TTGATATGGA TTGCATAGAA TGTGTAGATC TGTTTGGGGC 101640  
ACATTGTCTAT CTTTACAATA TTAAGCCTTC TGGCTGGGTG TGGTGGCTGA CGCCTGTAAT 101700  
20 CCCAGTACTT TGGGAGGCTG AGGCGGGCAT ATCACTTGAG GTCAGGAGTT CAAGACCAGC 101760  
CTGGCCAACG TGGTGAACCC CCGTCTCTAC TAAAAATAAA AAACAAATTA GTCGGAGGTG 101820  
GTGCACACCT GTAATCCCAG CTACAGGAGA GGGTGAGGCA GGAGAATCGC TTGAACCTGG 101880  
GAGGAGGAGG TTGCAGTGAG CTGAGATCAT GCCACTGCAC TCCAGCCTGG GTAACAGAGG 101940  
GAGACTCCAT CTTAAACAAC AACAATAACA GAAGAAAAAA ACAGTATTAA GTCTTCCAAT 102000  
25 TCATGAATGA AGGATCTGTC CATTTATTTA CGTCTTTAAT TTCTTTCAAC AGTATTTTGT 102060  
ACTGTTCAAG TCTTGACAT TCTTGGTTAA ATAAGTATTA TTTTGTATGC TTCTCTAAGG 102120  
AATGTTTTTT CTTTTCCTTT TTTTTTTTGA GACAGAGTCT TGCTCTGTCA CCCAGGCTGG 102180  
AGTGCAGTGG CACAATCTTG GCTCACTGCA ACCTCTGCCT CCCGGGTTCA AGCAATTCTT 102240  
CTGCTCAGCC TCCCAAGTAG CTGGGATCAC AGGTGCCTGC CACCACACCC AGCTAATTTT 102300  
30 TTTTTTTGAG ATGGAGTCTT GCTCTGTTGC CCAGGCTGGA GTGAAGTGGC CCAATCTTGG 102360  
CTCACTGCAA GCTCCACCTC CCGGGTTCAC ACCATTCTTC CGCCTCAGCC TCCTGAGTCG 102420  
CTGGGAATAC AGGTGCCTGC CACCACGCCC AGCTAATTTT TTGTATTTTT AGTAGAGATG 102480  
GGGTTTCACC ATGTAGCCAG GATGGTCTCG AACTCTTGAC CTCAGGTGAT CTGCCTGCCT 102540  
CGGCTCCCA AAGTGCTGGG ATTACAGATG TGAGCCACTG TGCCCGGCTC GAGTTGTTTT 102600

CCTTAGTTAC ATTTTCAGGC TGTTTGTGTC TAGTATATAG AAATACAAGC TGGGCACCGT 102660  
 GGCTCACGCC TGTAATCCCA GCACTTTGGG AGGCCAAGGC GGGTGGATCA CCTGTGGTCA 102720  
 GGAGTTCGAG ACCAGCCTGG CCAACATGGT GAAATCCAGC CTCTATTAAA AATACAAAAA 102780  
 TTAGTCTGGC ATGGTGGCAG GTGCCTGTAA TCCCATCTAC TCAGGAGGCT GAGGCAAGAG 102840  
 5 AATTGCTTGA ACCTGGGAGG CGGAGGTTGC AGTGAGCTGA GATCGCGCCA TTGCACTCCA 102900  
 GCTTGGGGAA CAAGAGTGAG ACTTCATCTC AAAAAAAAAA AAAAAGAAAT ACAGTGGATT 102960  
 TTTTATGTT AATCCTGTAT TGATTGCTGA ATTGGTTTAT TAGTGCTAAT AGGATTTTTT 103020  
 ATGCACTATT TAGGATTTTC GATATATACA ATCATATATA TTCAATATAT ACAATTAATA 103080  
 TATATGTGAA TAGAGATAAT TGTAGTCTTT GTTCTAGTT TGCATGGCAT TTATTTCTTT 103140  
 10 TTCTTGCTTA ACTGCCTTAG CTAGAAGTTC AAGTACGATG TTGAATAAAA GTGACTAGAG 103200  
 CGGGCCGGGG GTGGTGGCTC ACACCTGTGT TCCCAGCACT TTGGGAGGTG GAAAGTGGGCA 103260  
 GATCACTTGA GATCAGCAGT TTGAGACCAG CCTGGCCAAC ACGGCGAAAC CCCATCTCTA 103320  
 CTAAAAATAC AAAAATTAGC TGGGTGAGGT GATGTGCACC TGTAAGTCCCA GCTACTTGAG 103380  
 AGGGTGAGAC ATGAGAATTG CTTGAACCTG GGGGGCGGAG GTTGCAGTGA GCCAAGATCA 103440  
 15 TGCCACTCCA CTCCAGCCTG GACGACAGAG CAAGAACCCT GTCTTTAAAA AAAAAAAAAA 103500  
 AAAAGTGGCT AGAACAAACA TCTTTATCTT GTTCTGATC TTAGGTGGAA AACTTTTTTG 103560  
 TTCCTGATAT TAGGTGGAAA ACTTTTAGTC TTCACTGTT GAATATGATG TTACTTGATG 103620  
 GTTTCTGTA GATTCCCTTT ATCGAGTTGA GGAAATTCTC TTATATTCAT AGTGTGTTGA 103680  
 GTGTTTTTTA TCATGAAAGG GTGTTGATTT TTTTTTTAA GATAGGTCT TGTTCTGTCA 103740  
 20 CCCAGGCTGG AGGGCAGTGG CATGATCATG GCTCACTGCA ACCTCGAATT CCTGGGCTCA 103800  
 GGGGATCCTC CTAATTATC CTCCTGAGTA GGTGAGACTA CAGGCATGAG CCACCATGCC 103860  
 CAGCTAATTT TTTAATTTTT CTGTAGAGGT AGGGTCTGTC TTTGCTGCCC AGGCTGGTCT 103920  
 TAACTCCAG GGCTCAAGCA ATCCTGCCTC AGCCTCCCAA AGTCTGAGA TTACAGGGGT 103980  
 GAGTCACTGC ACTGCACCCA GCTGTGTGGG ATTTTTCAAA TGCTTTTTTC CTTTAGATGA 104040  
 25 TCATGTGTGG TTTTTCCT TTCATTTGT TAATGTGGTA TATTGATTT CGTATGTGA 104100  
 ACCATCCTTG AATTCCTCAG ATAAAGCACG CATATTCATG GCGTATTATC TCTTTATTAT 104160  
 TATTTTTTTT GTAGAGATGA GATTTCACTC TGTTGCCCAA GCTGGTCTCA AACTCCTGGG 104220  
 CTAAAGTGAT CCTCCTGCCT CAGCCTCCGA AAGCGCTGGG ATTATAGGCA TGAGCCACTT 104280  
 GGCCCTATCT TTTTCTTTT TCTTTTTTTT TTTTTTTGA GACAGAGTCT CACTCTGTCTG 104340  
 30 CCGGGCTGGA GTGAGTGGCG CGATCTCGGC TCACTGCAAC CTCCATCTCC CGGGTTCAAG 104400  
 CAATTCCTCT GCCTCAGCCT CCTGAGTAGC TGGGACTACA GGTGCCCCG ACTATGCCCA 104460  
 GCTAATTTTT TGTGTTTTTA GTTGAGACGG TGTTTTGCCA TGTGGACAG GCTGGTCTTG 104520  
 CACTCCTGAC CTCGTGATTC ACCCACCTTG GCCTCCCGAA GTGCTGGGAT TACAGGCATG 104580  
 AGCCACCGCA GCGAGCCTTA TCTTTTTAAC AGTTAAAAGT TTAAGGCCTT ATCATGTAAT 104640

AACATTGCTG GATTTGATTT GCTGCTGTTT TGTGAGAAT ATTTGCATCT GTATTGATAA 104700  
 GGGATATTGG TCTGTAGTTT TCTTTTCTTG GCATGTCTTT GTATAGCTTT GATGCCAGCA 104760  
 TAATATTGGC CTCATAGAAT GAGTTAGGAA GTATTCTTTA TATTATGGGA AGAGGTAAAA 104820  
 AGGGATTGGT GTTAATTCTT CTTCAAATGT TTGATAGAAT TCAACAGTGA AGTGATATAT 104880  
 5 ACAATCATAT ATATAGAGAG AGAGAGAGAG AGAGATGGAC TTTTCTTTTG TTGGAAGTTT 104940  
 ATTGACTATT GATTCAATTT CTTATTGAA ATTGACTTTT CTTTTTGGAA GCTAAAATGT 105000  
 ATAACGTAG TGAAAGTTTC TGAACTTTC TTTCATTGGA AGTTTTTTGA CTACTGATTC 105060  
 TTTATTGTGTT ATAGGTCTAT TCAGATTTTC TGTTCCTTCT TGAGTCAGTT TGGTCTCGCT 105120  
 CTGTCGCCCA GGCTGGAGTG CAGTGGTGCC ATCTTGGCTC ACTGCAACTT CTACCTCCCG 105180  
 10 AGTTCAAGTG ATTCTCCAC CTCAGCTCC CCAGTATCTC GGACTACAGG CGCACGCCAG 105240  
 CATACCTGGC TAATTTTTGT ATTTTATAGTA GGAACAGCAT TTCACCATGT TGGCCAGGCT 105300  
 GGTCTCGAAC TCCTGACCTC AGGTGATCCA CCCGCCTCGG CCTCACAAG TGCTGGGACT 105360  
 ACAGACATAA GCCACCGCGT CCAGCCTGA GTCAGTTTAG ATAGTTTGCA TGCATGTTTC 105420  
 TAGGAATTG TCCATTTGT TTATGTTATC TAATCTGTTA CCATACAATT GTTCATAGTA 105480  
 15 TCCTTTTATA GCCCTAGTTA TTTCTGTAAG ATCAGTAGTA ATAGCTCCAC TTTCTCTCTT 105540  
 GGTTTTAGCA ATTTGAGTCA TCTCTTTTCT TCTTCTTTT TTTTTTTGA GATGGAGTCT 105600  
 CACTGTGTCA CCCAGGCTGG AGTGAGTGG CATGATCTTG GCTCACTGCA ACCCTGCCT 105660  
 CCCAGGTTCA AGCAATTCTG CCTTAGCCTC CTGAGTAGCT GGGATTACAG GTGTGAGCCA 105720  
 CCACACCCAG CTAGTTTGT TTTGTTTTTT TGTTTTTGAG ACGGAGTCTG TTTCTGTCTC 105780  
 20 CCAGGCTGGA GTGCAGTGGT GCAATCTCAC TCATTGCAAC CTCCGACTCC CAGATTCCAG 105840  
 CAATTCTCCT GCCTCAGCCT CCCGAGTAGC TGGAACATA GCGGTGCACC ACCACGCCTG 105900  
 GCTGATTTTT ATATTTTTAG TAGAGATGGG ATTTACCAT GTTGCCAGG CTGGTCTTG 105960  
 ACTCCCTACC TGAGGTGATC CGCCACCTT GGCCTCCCA AGTGCTGGA TTATAGGCAT 106020  
 GAGCCACCAT GCCCAGCCAG TTTTGTATT TTTAGTAGAG ATGGGGTTT TCCCTGTCGG 106080  
 25 CCAGGCTGGT CTTGAAATCC TGACCTCAGG TTATCCACCA GCCTTGGCT CCCAAAGTGC 106140  
 TAGGATTACA GGCATGAGCC ACCACGCATG GCCTGTCTTT TCTTCTTGGT CATTTTCGCT 106200  
 AAAGGTTTGT CAATTTTGT GATCTTTTTT GTTGCTGATC TCTATTGTTT TCCCATCTG 106260  
 TTTCATTAT TTCCATTTA ACCTTGTTT CTTTTTTCT GCTGGTTTG GTTTAATTTG 106320  
 CTCTTTTTTT CCCCTAATTT TTCAAGGTAT ACAGTTAAGT TATTGATTTG AGATCTCTTT 106380  
 30 TTTCTTTTCT TTTTTTTTTT TTTTTTTTTT TTGTTGCT GTTGAGATGG AGTCTCCCTC 106440  
 TGTACCCAG ACTGGAGTGC AGTGGCATGA TCTCAGCTCA CTGCAGCCTC CGCCGCCAG 106500  
 GCGATTCTCC TGCCTCAGCC TCCTGAGTAG ACGTTTCCCG GCCAAGGTGT TTCTTTTTGA 106560  
 ATGTAAGCAT TTACAGCTAC AGATTCCCT CTAAACACTG CTTTCACTGC ATTCCATAAG 106620  
 ATTGTTTTTT GTTGTTTTTT GTTGTGTTT TGTGTTTGA GACACAGTCT CACTCTGTTG 106680

CCGTTTGGAG AGCAGCGATG CGATCATAGC TCTGTAGCCT TGAGCTCCTG GACTCAATCA 106740  
 GTCCTCCTGC CTCAGCCTCC CAAGTAGCTG GGACTACAGG TGTACACCAC TGCACCTAAC 106800  
 TAATTTCTTT TATAAGTTTT TGCAGAGGCC AGGCACAGTG GCTCACACCT GTAATCCCAG 106860  
 CACTTTGGGA GGCCAAGGTG GGTGGATCAC CTAAGGTCAG GAGTTCGAGA CCAGCCTGGC 106920  
 5 CGACAGGGAG AAACCCCATC TCTACTAAAA ATACAAAAAT TAGCTGGGCG TGGTGGCAGG 106980  
 TGCCTGTAAT CCCAGCTACT CAGGAGGCTG AGGCAGGAGA ATCGCTTGAA CCTGGGAGGC 107040  
 AGAGGTTGCA GTGAGCCAGG ATCACACCAT TGCACCTCAG CCTGGGTAAC AAAAGCAAAA 107100  
 CTCCATCTCA AGAAAAGAAA AAAAAAGTT TTTGCAGAGA CAGGGTATCA CTTTGTGTC 107160  
 CAGGCTGGTC TCAACTCCT GACTTGAAGG AGTCCTACTG CCTCAGCCTC CCAAAGTGCT 107220  
 10 GAGATTATGG GCAAGAGCCA CCGCACCCTG CCACTTGGCT GTTTTGTCTT GTTGATTTTC 107280  
 CATTTTCATT GATCTCAAGA CATCCTAATC TCCCTTTTGT TTTTGTGTC GACTTACTGG 107340  
 TTATTCAAGA GTGTCTTTAT TTCTGCATAT TTGTAAATTT TCCAAAAAG TTTTCTTTTC 107400  
 TTTTTTTTTT GAGAAAGGGT CTTGCTCTGT CGCCAGGCT GGAGAATGGT GGTGCACAAT 107460  
 CTGCTCTCAC TGCAACCTCT GCCTCCCGGG TTCAAGTGAT CCTCCACCT CAGCCTTCCC 107520  
 15 AGTAGCTGGG ATTACAGGCA CACACCACCA CACCTGGCTA ATTTTGTAT TTAGTCTTA 107580  
 ACGTGCTGGT CAGACTGGTC TCGAATTCCT GACCTCAGGT GATCTGCCC GCTTGGCCTC 107640  
 CCAAAGCACT GGGATTACAG GCGTGAAACA CCATGCCCAG CCCCCAATTT TTTTTTTT 107700  
 ATAGAGAGAA GGTCTCACTC AAGCCCAGGC TGGTCTTGAA CTCCTGAGCT CAAGCTGTCA 107760  
 TCCCTCCTCG GCCTCCAAG GTGTGAGAT TACAGGTGTG AGTCACAGTA CCTGGCCTTC 107820  
 20 TTTCAAGACT TAAAAATGC CATCTTGGCT GGGCACGGTG GCTCACGCT GTAATCCCAG 107880  
 CACTTTGGGA GGCCGAGGTG GGCAGATCAC GAGGTCAGGA GATCAAGACC ACCCTGGCTA 107940  
 ACATGGTGAA ACCCTGTCTC TACTAAAAAT ACAAAAAAT AACCAGGTGT GGTGGCAGGT 108000  
 GCCTGTAGTC CCAGCTACTC GGAAGCTGA AGCAGGAGAA TGGCGTGAAC CCGGAGGTG 108060  
 GAGCTTGAG TGAGCTGAGA TCACACCACT GTACTCCAGC CTGGGCAACA GTGCGAGACT 108120  
 25 CCGTCTCAAA AAAAAAAAAA AAAATGTCAT CTCACTGCCT TCTGGTCCAA TAGTTTCTGA 108180  
 TGAGAAATTG GCTGTTAATC TTATTGAGGA ACATTTATAT ATTGACTAGT CACTTGTCTC 108240  
 TTGCTGTTTT AGGAGATTCT CTATCTTGG GTTTCAGCAG TTTGATTATA ATGTATCAGT 108300  
 GTGGATCCCT CAATTTATAA GCTACTTGGA GTTCATTGGA CTTCTTGAT GTGTAAATTC 108360  
 ATGCTTTTCA TTAAATTTGC AAAGTTTCAG CTACTATTCT TTGCATCTTG AAATACTAGT 108420  
 30 TTTGTTTCTT TCTGTCTGTT TGCCGCTTAT GGAACCTTAT GCATACATTG ATGTGCTTCA 108480  
 TGGTGTAGCA CAGGTCCCTT GGGCTCTAGG CATTTTCTT TGTCTTTTTT TTCTTCTGC 108540  
 TCCTCATTTT GGATAATTC AGCTGACCTG TCCTCAAGTT CACTGTTTCT TTCTTCTTCC 108600  
 TTCTCAAATC TGCTGTTGAA ACTTCTGGTG AAATTTTCAC TACAGTTACT GTACTTTTTA 108660  
 GCTCCAAAGT TTCTATTTGG TTTCTTCTG TAGTAATTAT CACTTTACTA GTATTCTCTA 108720

TTTGGTTAGA CATGGTTCTT TTGTTTTCTT TTAGTTCATT ATCCATGGTT TCCTTTATTT 108780  
TTAAATTTCT TTTTATTTAG TTATTAATTT TTTTTTTTTT TGAAGCGGGG TTTCACCTCT 108840  
GTCACCCAGG CTGGCAGGCA ACGTCACAAT CTTGGCTCAC TACAACCTCC GCCTCCTGGG 108900  
TTCAAGTGAT TCTCCTGCCT CAGCCTCCCA AGTAGCTGGG ATTATAGGCA TGTGCCACCA 108960  
5 CACCCACCTA ATTTTGGTA TTTTGTAGT AACTGGGTT TCACCACATT GGCCAGACTG 109020  
GTCTTAACT ACTAACCTCA GGTGATCTGT CCGCCTCAGC CTCCCAAAAT GCTGGGATTA 109080  
CAGATGTGAG CCACTGTGCC CAGCCTCTTT TTTTAGTGTA TTTAAGGTAA TTGATTGAAA 109140  
GTTTTGTCT AGTCATTCAA ATGTCTAGGC TTCCTCAGGA ACAGTTTCTA TTAATTTCTT 109200  
TATTTTTAAA AAATTTTTTT TAATTTTCTT TTTTTTTTAG ATGGAGTCTC ACTCTATAGC 109260  
10 CTAGGCTGGA GTGCAATGGC TTGATCTTGG CTCACGTCAA CCTCTGCCTC CTGGGTTCAT 109320  
GCGATTCTCC TGCTTCAGCC TCCTGAGTAG CTGGGACTAT AGGTGCGTGC CACCACTCCT 109380  
GGCTAATTTT TTGTATTTTC AGTAGAGACA TGGTTTTGCC GTGTTAGCCA GGATGGTCTC 109440  
GATCTCGTGA CCTCATGATC CTCCTGCCTC GGCCTCCCAA AGTGCTGGAA TTACAGGTGT 109500  
GAGCCACCGC GCCCAGCCTA TTTTTATTT TTTGAGACAA AGTCTCCCTC TCTCACCAG 109560  
15 GCTGTAGTGC AGTGGCACAA CCCTGGCACA CTGCAGCCTT AACCGTCCAG GCTTAAGTGA 109620  
GTCTCCCACC TTAGTCTCCT GAGTAGCTAG AACTACAAGC ATGTGCCACC ATGCCTGGCT 109680  
GGTTGTGTTG TTAGTGTTTT AGACACAGGG TCTTGCTACA TTTCTCTGAC TGGTCTTGAA 109740  
CTCCTGGGCT CAAGCAGTCA TCCCACCTTG GCCTCCCAAG GTGTTGAGAT TACAGGTGTG 109800  
AGCCACCGCA CCCGGCCTGT TAATTTCTTT ATTTCCGGTG AATGGGCCAC ACTTTCTTGT 109860  
20 TTCTTTGCAT GCCTTGTAAT TTTTGTGTA AACCTGCACA ATTTGAAGAT GATAATGTGG 109920  
TTACTTTGAA AATCAGATCC TCCGCCCTCT GCAGGGTTCA TTGTTGCTGT TTGTTGTGGA 109980  
TTGTGTTTTT TCGTTTGTGT AGTTACTTTC CTGACCTTTT TAAATAAAGA CTATATTCTG 110040  
TCAGGGGTGC TTGTTTCTGT TCTTTTAGGT TAGTGGTTAG CTTGTGCTTT GAAAGAGATT 110100  
TCTTTAAATA TCTAGTGGCA AAAAGGATAA AGAGGCCGGG CGCAGTGGCT CACGCCTGTA 110160  
25 ATGCTAGGAC TTTGGGAAGT GGAGGCGGGT GGATCACTTG AGGTCAGGAG TTTAAGATCA 110220  
GCCTGGCCAG TATGGTGAAA CCCTGTCTCT ACTAAAAATA CAAAAATPAA CCGGGCATGG 110280  
TGGCACCTGC CTGTAGTCCC AGCTACTGGG AAGACTGAGG CAGGAGAATC GCTTCAATCC 110340  
AGGGGGCGGA GGTGTCAGTG AGCTGAGATT GCGCCATTGC ACTCCAGCCT GGGCAACAGA 110400  
GCGAGACTCT GTCTCAAATA AAAAAAAAAA AAAAAGGATA AAGAGTGTCT TCCATCCTTT 110460  
30 CCAGGTGCCC TCTGTACTGG GGCAAGTCCT TCAGTGTCCG CCAGGCTGTT CACGGCTTTT 110520  
CCTCAGCCTT TACTTCTCGC TCCCATGGAG CCTAAGGATG AACCAGAGGT GAAAGTTGAG 110580  
GGCCTCCTCA GGTGTTTCTG AGCCCTGTG TAGCCCCAGC TGTGTGCATG GCCTTCTGGA 110640  
TTTCCAAGCA TGAACAGGAG CTTTCCAAAG CCCTTAGACC TTCATGTAGC TCTTTTCCCA 110700  
GCCTCTCTCT TCTTAGGCTT TTCTGTCAGC TCTTTGCCCA TCTGTTGTTG TCCCTCCCCC 110760



ACAACTTCAG GTAGTATCTA CCTGTAAATG CCTTCAGGCC AGGCGCGGTG GCTCATACCT 110820  
 GTTATCCCAG CACTTTGGGA GGCCGAGGCG GGTGAATTGC TTGAGGTCAG GAGTTCGAGA 110880  
 CCAGCCTGGC CAACATGGTG AAGCCCCGTC TCTAGTAAAA ATACAAAAAT TAGCTGGGCG 110940  
 TGGTGGGTGC CTGTAATCTC AGCTACTCGG GAGGCTGAAG CAGGAGAATT GCTTGAGCCT 111000  
 5 GGGAGGCGGA GGTGTCAGTG AGCTGAGATC GTGCCATTGC ACTCCAGCCT GGGCGACAGA 111060  
 GTGAGACTCC ATCTCGGGGA AAAAAAAAAA AAAAAAATGC CATCAACAGC ACGACCCTGG 111120  
 AGGCTGCCCC AGCCCTGAGA GAGTTCGAGG GGGTGAACA AAGGCAAGCC CTTCAGGGAG 111180  
 AACTAGAAA GATCCAAATG CATAAGCAGG ATTCCCTGAG AAAAGGTCTG TATCATCCCT 111240  
 TCTGACACCA GCAAGCCACA TCAGAAATAC AGGTTGCCTT CCCCATGGCT ACATGTGAGC 111300  
 10 TGGTAGTAGT GGCTGAGCAG AAATAGCCCA GCTGTCTCTC TGAAATTTAG CAGGGTCTTA 111360  
 CTTCATTGAG CAGTCATCTG GTTCGTAGAC ACCAGAGTTA CAGAAAAGTT TATTGGGAGG 111420  
 TTTTGACAGT TTAATAGAAA AAAGTTTATT GTGACAGTTT TGACAGCTGA ATAGAAAAAA 111480  
 GTTACTGTG ACAGTTTGA CAGCAGAATA GTTGCTTTGC TGGAGAGACG GATCTTTGGA 111540  
 GCTGCCAACT CCATCATTTT GGTGATATCC AGCTCTGTTG CTGAATTTTT AGCTATGCTG 111600  
 15 TTTTAAGTTA TTTTCTTAGT GGTGCTCTA GAGATGACAA TGTGCATCTT TAACCTACCA 111660  
 CAATGTACTT CAGATTATTA CTAAGTTAAC ACTTAAAGTA CAGCATTTTT TTTTTATGG 111720  
 AGTTTCACTC TGTCACCCAG GCTGGAGTGC AATGGTGTGA TCTCGGCTCA CTGCAACCTC 111780  
 CGCCTCCCAG GTTCACGCCA TTCTCTGCC TCAGCCTCCT GAGTAGCTGG GACTACAGGC 111840  
 ACCCCCACCA CACCCGGCTA ATTTTGTATT TTTAGTAGAG ATGAGGTTTC ACCATGTTGG 111900  
 20 TCAGGCTGGT CTCGAAGTGC TGACCTCAGG TGATCCGCCC ATCTTGGCCT CCCAAAGTGC 111960  
 TGGGATTACA GGTGTGAGCG ACTGCACTGA GCCTAAGTAT GGCAACGTGT CTATAACATA 112020  
 GATCTACTTC CGTTGTACTA TGACATAGTT CCCCCTCCAT TTTCTATAG CACAGTCCCA 112080  
 ACCTCCCTTT TCCTCTGACA TAGTTCCATC CTCCCTCCTC CTATGACGTC CTCCCTTCTC 112140  
 CTCTGGCATA GCTCCATCCT CCCTTCTCCT ATGACACAGC TCCATCCTCC CTCTCTCTCT 112200  
 25 GACACAGCTC CATCCTCCCT TCTCCTATGA CACAGCTCCA TCCTCCCTTC TCCTCTGACA 112260  
 TAGCTCCATC CTCCCTTCTC CTATGTCATA GCTCCATCCT CCCTTCTCCT CTGACACAGC 112320  
 TCCATCCTCC CTCTCTCTCT GGCATAGCTC CATCCTCCCT TCTCCTATGA CACAGCTCCA 112380  
 TCCTCCCTTC TCCTATGACA CAGCTCCATC CTCCCTTCTC CTATGACACA GCTCCATCCT 112440  
 CCCTTCTCCT ATGACACAGC TCCATCCTCC CTCTCTCTCT GGCATAGCTC CATCCTCCCT 112500  
 30 TCTCCTCTGA CATAGCTCCA TCCTCCCTTC TCCTCTGACA TAGCTCCATC CTCCCTTCTC 112560  
 CTCTGACATA GCTCCATCCT CCCTTCTCCT CTGACATAGC TCCATCCTCC CTCTCTCTCT 112620  
 GACATAGCTC CATCCTCCCT TCTCCTCTGA CATAGTTCCA TCCTCCCTTG TCCTCTGACA 112680  
 TAGCTCCATC CTCCCTTCTC CTCTGACATA GCTCCATCCC CTCTTCTCCT TCATGTATTA 112740  
 TTGCCATATA TACATTTATG TATGTTATAA CTTGAGCTCT TCAGCGTTAT AATTATTGCT 112800

TCAAAAGTAT TTTGAAAGAA GTTGCCCTGGA GGCAGTGGCT TATGCCTTTA ACTCCAGCAC 112860  
TTTTGGGGGC TGAGGTGGGC AGATCGCCTG AGCCAGGGAG TTGGAGACCA GCCTGGGCAA 112920  
CATGACGAAA CCCATCTCCA CCAAAATTAC AAAAAATTAG TCTGGCATGG TGGCACGCGC 112980  
CTGTAGTCCC AGCTATTTGG GGGAGGATCC CAGCTAAGGT GGGAGGATCA CTTGAGCCTG 113040  
5 GGAAGTCAAG GCTGCAGTGA GCTGAGATTG TGCCACTGCA CTCCAGCCTG GGTGCAGATC 113100  
TTATCTCAGA AGTAAAGGGA CTAGGAATGG TGGCTTTTAT CTCTAATCCC AGCACTTTGG 113160  
GAGGCTGAGG TGAGTGGATC ACCGGAGGTC AGGAGTTTAA GACCAGCCTG GCCAACATGG 113220  
TGAAACCCCG TCTCTACTAA AAATACAAAA AGTAGCCGGG TGTGGTGGTG GGTGTCTGTA 113280  
ATCCCAGCTA CTCGGGAGGC TGAGGCAAGA GAATCGCTTG AACCTGGGAA GCGGAGGTTG 113340  
10 CAGTGAGCAA GATCGCACCA CTGCATTACA GCCTAGATGA CAGAGCGAGA CTGTGCCTAA 113400  
AAAAAAAAAA AAAAAGAAAA GAAAAGAAAT TAAGATCTAG ACACTGTGGT TCATGCCTGT 113460  
AATCCCAAAG CCTTGGGAGG CCAAGGCAGG AGGATCACTT GAGGCCAGGA GTTCAACACC 113520  
AGCCTGGGCA ACATAGCGAG ACTCCATCTC TATTTAAAAA AGAAAGAAAT TCAAAGAGAA 113580  
AAAAAGTATA CTTGTTTTTT TGTATCATCC ATATTTTACC TTTCTTTTTT TTGCCCTTT 113640  
15 TTCTTTCCTG TGAATTTGAG TTACTGTCTA GTGTCATTTC CTTTTAGTCT GAAGAACTTC 113700  
ATTTAGAATT TTTTTTTTTT TTTGAGACAA AGTCTCACTG TGTTGCCCAG GCTGGAGTGC 113760  
AATGGTGAG TCTCAGATCA CTGCAACCTC TGCTCCCTG GTTAGAGTGA TTTTCCTGCC 113820  
TCAGCCTCCC AAGTAGCTGA GACTGCAGGC ACCTGCCACC ACCCCCAGCC AATTTTTTTG 113880  
GTATTTTTAG TAGAGACAGG GTTTCATAT GTTGGCCAGG CTGGTCTCGA ATTCATGACC 113940  
20 TCATGATCTG CCTGTCTCTG CCTCCCAAAA TGCTGGGATT ACCATGAGCC ACCACGCCCA 114000  
GCCCATTAG AATTTCTTTT TTTTTTTTTT TTTTGAGATG GGGTCTCGCT CTTGTTTCCC 114060  
AGGCTGGAGT GCAGTGGCAC GATCTCGGCT CACTGCGAGC TCCGCCTCCC GGGTTCACGC 114120  
CATTCCTCTG CCTCAGCCTC CCGAGTAGCT GGGATTACAG GCGCCTGCCA CCACGCCAC 114180  
CTAATTTTTT GTATTTTTAG GAGAGATGGG GTTTCACCAT GTTAGCCAGG ATGGTCTTGA 114240  
25 TCTCCTGACC TCGTGATCCG CCCGCCTTGG CCTCCCAAAG TGCTGGGATT ACAGGCCTGA 114300  
GCCACGCGC CCGCTAGAA TTTCTTGTAG GACAGGCTTG CTAGCAACCA ATTCAGTGTT 114360  
TATTTGGGAA TGTCTTTATT TCAGCTTCAT TTTTGAAGG ATAGTTTAGC TGGCTATAGA 114420  
ATTATTAATT GATCATTCTT TTCAGTGTTT AAAAGTGTCA TCATGCTACC TTCTGGGTTT 114480  
CATTGTTTCT GATGAGAAGT CATCTGTCAA ATTGTCCCTT TGTACTTGAA GAATTATCTT 114540  
30 TTTTCTCTT GATGTTTCA AGATTTCTC TTTGTCTTTG GCCTTTAGTA GTTTGTGATG 114600

TATCTAGGTG TGGATCTCTT GGTGTGCATC GTATTTGGGC TTCAGTAAGC CTCTTAGATT 114660  
 CATAGATTAA TGTTTTGTTT TGTTTTACCA AATTGGAGA GTTTTACTC ATCATTCAA 114720  
 CAAATTTTTT TCCTGCCCCCT CTCTCATCTC CTTTGGGAG TACCACTGCA TGTATGTTGG 114780  
 TGTGCGTTCT CTA (SEQ ID NO:3) 114793.

5       The present invention also relates to a portion of SEQ ID NO:3 which comprises 5' regulatory regions, exons, introns and 3' non-translated regions which comprise the human NHL gene of the present invention. Such regulatory sequence may be found within the various regions of this 115 kb fragment. The 5' portion of SEQ ID NO:1 begins at nucleotide 47095 of SEQ ID NO:3, the initiating ATG of human NHL is from nucleotide 48687-48689  
 10 of SEQ ID NO:3, the termination 'TAG' codon is from nucleotide 84855-84857, while the 3' terminus of SEQ ID NO:1 as disclosed herein (GCAGTGCCC) corresponds to nucleotides 85308-85316. To this end, one preferred aspect of the invention is an isolated genomic fragment or fragments which comprise from about nucleotide 470000 to about nucleotide 85500 of SEQ ID NO:3), which comprises the portion of the genomic clone encoding the  
 15 mRNA transcript responsible for human NHL (see Figure 5A-B). The genomic sequence encoding NHL contains 35 exons (Figure 5A). An especially preferred aspect of the invention is a human genomic fragment or fragments which comprise from about nucleotide 47095 to about nucleotide 85316 of SEQ ID NO:3. As noted in regard to SEQ ID NO:1, the present invention also relates to DNA vectors and recombinant hosts which comprise at least  
 20 a portion of SEQ ID NO:3. Portions of the 115 kb genomic fragment may be housed in multiple vector/hosts so as to optimize handling of the DNA sequences within SEQ ID NO:3. Therefore, the present invention relates to the isolated genomic sequence which set forth as SEQ ID NO:3, a region of SEQ ID NO:3 which contains the coding and non-coding region of human NHL, as well as *cis*-acting sequences within SEQ ID NO:3 which effect regulation of  
 25 transcription of one or more of the genes localized within this 115 kb human genomic fragment, including regulatory regions effecting levels of NHL, M68/DcR3, SCLIP and ARP. As noted above, this region of chromosome 20 (20q13.3) is associated with tumor growth. Therefore, an aspect of this invention also comprises, as one example, the use of one or more regulatory regions of this 115 kb genomic sequence as a target to antagonize the effect of a  
 30 transcriptional factor(s) which normally upregulate expression of a gene which has a caustic role in tumor growth. Alternatively, compounds may be selected which interacts with a specific *cis*-acting sequence to upregulate a gene within this region, where upregulation results in a decrease in tumor growth.

The present invention is also directed to methods of screening for compounds

which modulate the expression of DNA or RNA encoding a NHL protein. Compounds which modulate these activities may be DNA, RNA, peptides, proteins, or non-proteinaceous organic molecules. Compounds may modulate by increasing or attenuating the expression of DNA or RNA encoding NHL, or the function of the NHL-based protein. Compounds that modulate the expression of DNA or RNA encoding NHL or the biological function thereof may be detected by a variety of assays. The assay may be a simple "yes/no" assay to determine whether there is a change in expression or function. The assay may be made quantitative by comparing the expression or function of a test sample with the levels of expression or function in a standard sample. Kits containing NHL, antibodies to NHL, or modified NHL may be prepared by known methods for such uses.

The DNA molecules, RNA molecules, recombinant protein and antibodies of the present invention may be used to screen and measure levels of NHL. The recombinant proteins, DNA molecules, RNA molecules and antibodies lend themselves to the formulation of kits suitable for the detection and typing of NHL. Such a kit would comprise a compartmentalized carrier suitable to hold in close confinement at least one container. The carrier would further comprise reagents such as recombinant NHL or anti-NHL antibodies suitable for detecting NHL. The carrier may also contain a means for detection such as labeled antigen or enzyme substrates or the like.

The assays described above can be carried out with cells that have been transiently or stably transfected with NHL. The expression vector may be introduced into host cells via any one of a number of techniques including but not limited to transformation, transfection, protoplast fusion, and electroporation. Transfection is meant to include any method known in the art for introducing NHL into the test cells. For example, transfection includes calcium phosphate or calcium chloride mediated transfection, lipofection, infection with a retroviral construct containing NHL, and electroporation. The expression vector-containing cells are individually analyzed to determine whether they produce NHL protein. Identification of NHL expressing cells may be done by several means, including but not limited to immunological reactivity with anti-NHL antibodies, labeled ligand binding, the presence of host cell-associated NHL activity.

The specificity of binding of compounds showing affinity for NHL is shown by measuring the affinity of the compounds for recombinant cells expressing NHL.

Expression of human NHL and screening for compounds that bind to NHL or that inhibit the binding of a known, radiolabeled ligand of NHL provides an effective method for the rapid selection of compounds with high affinity for NHL. Such ligands need not necessarily be radiolabeled but can also be nonisotopic compounds that can be used to displace bound radiolabeled compounds or that can be used as activators in functional assays. Compounds identified by the above method are likely to be agonists or antagonists of NHL and may be peptides, proteins, or non-proteinaceous organic molecules.

Accordingly, the present invention is directed to methods for screening for compounds which modulate the expression of DNA or RNA encoding a NHL protein as well as compounds which effect the function of the NHL protein. Methods for identifying agonists and antagonists of other receptors are well known in the art and can be adapted to identify agonists and antagonists of NHL. For example, Cascieri et al. (1992, *Molec. Pharmacol.* 41:1096-1099) describe a method for identifying substances that inhibit agonist binding to rat neurokinin receptors and thus are potential agonists or antagonists of neurokinin receptors. The method involves transfecting COS cells with expression vectors containing rat neurokinin receptors, allowing the transfected cells to grow for a time sufficient to allow the neurokinin receptors to be expressed, harvesting the transfected cells and resuspending the cells in assay buffer containing a known radioactively labeled agonist of the neurokinin receptors either in the presence or the absence of the substance, and then measuring the binding of the radioactively labeled known agonist of the neurokinin receptor to the neurokinin receptor. If the amount of binding of the known agonist is less in the presence of the substance than in the absence of the substance, then the substance is a potential agonist or antagonist of the neurokinin receptor. Where binding of the substance such as an agonist or antagonist to is measured, such binding can be measured by employing a labeled substance or agonist. The substance or agonist can be labeled in any convenient manner known to the art, e.g., radioactively, fluorescently, enzymatically.

Therefore, the present invention includes assays by which modulators of NHL are identified. As noted above, methods for identifying agonists and antagonists are known in the art and can be adapted to identify compounds which effect *in vivo* levels of NHL. Accordingly, the present invention includes a method for determining whether a substance is a potential modulator of mammalian NHL levels that

comprises:

- (a) providing test cells by transfecting cells with an expression vector that directs the expression of NHL in the cells;
- (b) exposing the test cells to the substance;
- 5 (c) measuring the amount of binding of the substance to NHL;
- (d) comparing the amount of binding of the substance to NHL in the test cells with the amount of binding of the substance to control cells that have not been transfected with NHL or a portion thereof; wherein if the amount of binding of the substance is greater in the test cells as compared to the control cells, the substance
- 10 is capable of binding to NHL.

The conditions under which step (b) of the method is practiced are conditions that are typically used in the art for the study of protein-ligand interactions: e.g., physiological pH; salt conditions such as those represented by such commonly used buffers as PBS or in tissue culture media; a temperature of about 4°C to about 55°C.

15 The assays described above can be carried out with cells that have been transiently or stably transfected with NHL. Transfection is meant to include any method known in the art for introducing NHL into the test cells. For example, transfection includes calcium phosphate or calcium chloride mediated transfection, lipofection, infection with a retroviral construct containing NHL, and electroporation.

20 Where binding of the substance or agonist to NHL is measured, such binding can be measured by employing a labeled substance or agonist. The substance or agonist can be labeled in any convenient manner known to the art, e.g., radioactively, fluorescently, enzymatically.

Therefore, the specificity of binding of compounds having affinity for NHL  
25 shown by measuring the affinity of the compounds for recombinant cells expressing the cloned receptor or for membranes from these cells. Expression of the cloned receptor and screening for compounds that bind to NHL or that inhibit the binding of a known, radiolabeled ligand of NHL to these cells provides an effective method for the rapid selection of compounds with high affinity for NHL. Such ligands need not  
30 necessarily be radiolabeled but can also be nonisotopic compounds that can be used to displace bound radiolabeled compounds or that can be used as activators in functional assays. It is also possible to construct assays wherein compounds are tested for an ability to modulate helicase activity in an *in vitro*- or *in vivo*- based assay. Compounds identified by the above method again are likely to be agonists or

antagonists of NHL and may be peptides, proteins, or non-proteinaceous organic molecules. As noted elsewhere in this specification, compounds may modulate by increasing or attenuating the expression of DNA or RNA encoding NHL, or by acting as an agonist or antagonist of the NHL receptor protein. Again, these compounds that  
5 modulate the expression of DNA or RNA encoding NHL or the biological function thereof may be detected by a variety of assays. The assay may be a simple "yes/no" assay to determine whether there is a change in expression or function. The assay may be made quantitative by comparing the expression or function of a test sample with the levels of expression or function in a standard sample.

10 Expression of NHL DNA may also be performed using *in vitro* produced synthetic mRNA. Synthetic mRNA can be efficiently translated in various cell-free systems, including but not limited to wheat germ extracts and reticulocyte extracts, as well as efficiently translated in cell based systems, including but not limited to microinjection into frog oocytes, with microinjection into frog oocytes being  
15 preferred.

Following expression of NHL in a host cell, NHL protein may be recovered to provide NHL protein in active form. Several NHL protein purification procedures are available and suitable for use. Recombinant NHL protein may be purified from cell lysates and extracts by various combinations of, or individual application of salt  
20 fractionation, ion exchange chromatography, size exclusion chromatography, hydroxylapatite adsorption chromatography and hydrophobic interaction chromatography. In addition, recombinant NHL protein can be separated from other cellular proteins by use of an immunoaffinity column made with monoclonal or polyclonal antibodies specific for full-length NHL protein, or polypeptide fragments  
25 of NHL protein.

Polyclonal or monoclonal antibodies may be raised against NHL or a synthetic peptide (usually from about 9 to about 25 amino acids in length) from a portion of NHL disclosed in SEQ ID NO:2. Monospecific antibodies to NHL are purified from mammalian antisera containing antibodies reactive against NHL or are prepared as  
30 monoclonal antibodies reactive with NHL using the technique of Kohler and Milstein (1975, *Nature* 256: 495-497). Monospecific antibody as used herein is defined as a single antibody species or multiple antibody species with homogenous binding characteristics for NHL. Homogenous binding as used herein refers to the ability of the antibody species to bind to a specific antigen or epitope, such as those associated

with NHL, as described above. Human NHL-specific antibodies are raised by immunizing animals such as mice, rats, guinea pigs, rabbits, goats, horses and the like, with an appropriate concentration of NHL protein or a synthetic peptide generated from a portion of NHL with or without an immune adjuvant.

5       Preimmune serum is collected prior to the first immunization. Each animal receives between about 0.1 mg and about 1000 mg of NHL protein associated with an acceptable immune adjuvant. Such acceptable adjuvants include, but are not limited to, Freund's complete, Freund's incomplete, alum-precipitate, water in oil emulsion containing *Corynebacterium parvum* and tRNA. The initial immunization consists of  
10   NHL protein or peptide fragment thereof in, preferably, Freund's complete adjuvant at multiple sites either subcutaneously (SC), intraperitoneally (IP) or both. Each animal is bled at regular intervals, preferably weekly, to determine antibody titer. The animals may or may not receive booster injections following the initial immunization. Those animals receiving booster injections are generally given an equal amount of  
15   NHL in Freund's incomplete adjuvant by the same route. Booster injections are given at about three week intervals until maximal titers are obtained. At about 7 days after each booster immunization or about weekly after a single immunization, the animals are bled, the serum collected, and aliquots are stored at about -20°C.

Monoclonal antibodies (mAb) reactive with NHL are prepared by immunizing  
20   inbred mice, preferably Balb/c, with NHL protein. The mice are immunized by the IP or SC route with about 1 mg to about 100 mg, preferably about 10 mg, of NHL protein in about 0.5 ml buffer or saline incorporated in an equal volume of an acceptable adjuvant, as discussed above. Freund's complete adjuvant is preferred. The mice receive an initial immunization on day 0 and are rested for about 3 to about  
25   30 weeks. Immunized mice are given one or more booster immunizations of about 1 to about 100 mg of NHL in a buffer solution such as phosphate buffered saline by the intravenous (IV) route. Lymphocytes, from antibody positive mice, preferably splenic lymphocytes, are obtained by removing spleens from immunized mice by standard procedures known in the art. Hybridoma cells are produced by mixing the splenic  
30   lymphocytes with an appropriate fusion partner, preferably myeloma cells, under conditions which will allow the formation of stable hybridomas. Fusion partners may include, but are not limited to: mouse myelomas P3/NS1/Ag 4-1; MPC-11; S-194 and Sp 2/0, with Sp 2/0 being preferred. The antibody producing cells and myeloma cells are fused in polyethylene glycol, about 1000 mol. wt., at concentrations from about



30% to about 50%. Fused hybridoma cells are selected by growth in hypoxanthine, thymidine and aminopterin supplemented Dulbecco's Modified Eagles Medium (DMEM) by procedures known in the art. Supernatant fluids are collected from growth positive wells on about days 14, 18, and 21 and are screened for antibody  
5 production by an immunoassay such as solid phase immunoradioassay (SPIRA) using NHL as the antigen. The culture fluids are also tested in the Ouchterlony precipitation assay to determine the isotype of the mAb. Hybridoma cells from antibody positive wells are cloned by a technique such as the soft agar technique of MacPherson, 1973, Soft Agar Techniques, in *Tissue Culture Methods and Applications*, Kruse and  
10 Paterson, Eds., Academic Press.

Monoclonal antibodies are produced *in vivo* by injection of pristine primed Balb/c mice, approximately 0.5 ml per mouse, with about  $2 \times 10^6$  to about  $6 \times 10^6$  hybridoma cells about 4 days after priming. Ascites fluid is collected at approximately 8-12 days after cell transfer and the monoclonal antibodies are purified  
15 by techniques known in the art.

*In vitro* production of anti- NHL mAb is carried out by growing the hybridoma in DMEM containing about 2% fetal calf serum to obtain sufficient quantities of the specific mAb. The mAb are purified by techniques known in the art.

Antibody titers of ascites or hybridoma culture fluids are determined by  
20 various serological or immunological assays which include, but are not limited to, precipitation, passive agglutination, enzyme-linked immunosorbent antibody (ELISA) technique and radioimmunoassay (RIA) techniques. Similar assays are used to detect the presence of NHL in body fluids or tissue and cell extracts.

It is readily apparent to those skilled in the art that the above described  
25 methods for producing monospecific antibodies may be utilized to produce antibodies specific for NHL peptide fragments, or a respective full-length NHL.

NHL antibody affinity columns are made, for example, by adding the antibodies to Affigel-10 (Biorad), a gel support which is pre-activated with N-hydroxysuccinimide esters such that the antibodies form covalent linkages with the  
30 agarose gel bead support. The antibodies are then coupled to the gel via amide bonds with the spacer arm. The remaining activated esters are then quenched with 1M ethanolamine HCl (pH 8). The column is washed with water followed by 0.23 M glycine HCl (pH 2.6) to remove any non-conjugated antibody or extraneous protein. The column is then equilibrated in phosphate buffered saline (pH 7.3) and the cell

culture supernatants or cell extracts containing full-length NHL or NHL protein fragments are slowly passed through the column. The column is then washed with phosphate buffered saline until the optical density ( $A_{280}$ ) falls to background, then the protein is eluted with 0.23 M glycine-HCl (pH 2.6). The purified NHL protein is then  
5 dialyzed against phosphate buffered saline.

Pharmaceutically useful compositions comprising modulators of NHL may be formulated according to known methods such as by the admixture of a pharmaceutically acceptable carrier. Examples of such carriers and methods of formulation may be found in Remington's Pharmaceutical Sciences. To form a  
10 pharmaceutically acceptable composition suitable for effective administration, such compositions will contain an effective amount of the protein, DNA, RNA, modified NHL, or either NHL agonists or antagonists including tyrosine kinase activators or inhibitors.

Therapeutic or diagnostic compositions of the invention are administered to an  
15 individual in amounts sufficient to treat or diagnose disorders. The effective amount may vary according to a variety of factors such as the individual's condition, weight, sex and age. Other factors include the mode of administration.

The pharmaceutical compositions may be provided to the individual by a variety of routes such as subcutaneous, topical, oral and intramuscular.

20 The term "chemical derivative" describes a molecule that contains additional chemical moieties which are not normally a part of the base molecule. Such moieties may improve the solubility, half-life, absorption, etc. of the base molecule. Alternatively the moieties may attenuate undesirable side effects of the base molecule or decrease the toxicity of the base molecule. Examples of such moieties are  
25 described in a variety of texts, such as Remington's Pharmaceutical Sciences.

Compounds identified according to the methods disclosed herein may be used alone at appropriate dosages. Alternatively, co-administration or sequential administration of other agents may be desirable.

The present invention also has the objective of providing suitable topical, oral,  
30 systemic and parenteral pharmaceutical formulations for use in the novel methods of treatment of the present invention. The compositions containing compounds identified according to this invention as the active ingredient can be administered in a wide variety of therapeutic dosage forms in conventional vehicles for administration. For example, the compounds can be administered in such oral dosage forms as tablets,

capsules (each including timed release and sustained release formulations), pills, powders, granules, elixirs, tinctures, solutions, suspensions, syrups and emulsions, or by injection. Likewise, they may also be administered in intravenous (both bolus and infusion), intraperitoneal, subcutaneous, topical with or without occlusion, or  
5 intramuscular form, all using forms well known to those of ordinary skill in the pharmaceutical arts.

Advantageously, compounds of the present invention may be administered in a single daily dose, or the total daily dosage may be administered in divided doses of two, three or four times daily. Furthermore, compounds for the present invention can  
10 be administered in intranasal form via topical use of suitable intranasal vehicles, or via transdermal routes, using those forms of transdermal skin patches well known to those of ordinary skill in that art. To be administered in the form of a transdermal delivery system, the dosage administration will, of course, be continuous rather than intermittent throughout the dosage regimen.

15 For combination treatment with more than one active agent, where the active agents are in separate dosage formulations, the active agents can be administered concurrently, or they each can be administered at separately staggered times.

The dosage regimen utilizing the compounds of the present invention is selected in accordance with a variety of factors including type, species, age, weight,  
20 sex and medical condition of the patient; the severity of the condition to be treated; the route of administration; the renal, hepatic and cardiovascular function of the patient; and the particular compound thereof employed. A physician or veterinarian of ordinary skill can readily determine and prescribe the effective amount of the drug required to prevent, counter or arrest the progress of the condition. Optimal precision  
25 in achieving concentrations of drug within the range that yields efficacy without toxicity requires a regimen based on the kinetics of the drug's availability to target sites. This involves a consideration of the distribution, equilibrium, and elimination of a drug.

The present invention also relates to a non-human transgenic animal which is  
30 useful for studying the ability of a variety of compounds to act as modulators of NHL, or any alternative functional NHL *in vivo* by providing cells for culture, *in vitro*. In reference to the transgenic animals of this invention, reference is made to transgenes and genes. As used herein, a transgene is a genetic construct including a gene. The transgene is integrated into one or more chromosomes in the cells in an animal by

methods known in the art. Once integrated, the transgene is carried in at least one place in the chromosomes of a transgenic animal. Of course, a gene is a nucleotide sequence that encodes a protein, such as one or a combination of the cDNA clones described herein. The gene and/or transgene may also include genetic regulatory elements and/or structural elements known in the art. A type of target cell for transgene introduction is the embryonic stem cell (ES). ES cells can be obtained from pre-implantation embryos cultured *in vitro* and fused with embryos (Evans et al., 1981, *Nature* 292:154-156; Bradley et al., 1984, *Nature* 309:255-258; Gossler et al., 1986, *Proc. Natl. Acad. Sci. USA* 83:9065-9069; and Robertson et al., 1986 *Nature* 322:445-448). Transgenes can be efficiently introduced into the ES cells by a variety of standard techniques such as DNA transfection, microinjection, or by retrovirus-mediated transduction. The resultant transformed ES cells can thereafter be combined with blastocysts from a non-human animal. The introduced ES cells thereafter colonize the embryo and contribute to the germ line of the resulting chimeric animal (Jaenisch, 1988, *Science* 240: 1468-1474). It will also be within the purview of the skilled artisan to produce transgenic or knock-out invertebrate animals (e.g., *C. elegans*) which express the NHL transgene in a wild type background as well in *C. elegans* mutants knocked out for one or both of the NHL subunits. These organisms will be helpful in further determining the dominant negative effect of NHL as well as selecting from compounds which modulate this effect.

The present invention also relates to a non-human transgenic animal which is heterozygous for a functional NHL gene native to that animal. As used herein, functional is used to describe a gene or protein that, when present in a cell or *in vitro* system, performs normally as if in a native or unaltered condition or environment. The animal of this aspect of the invention is useful for the study of the retinal specific expression or activity of NHL in an animal having only one functional copy of the gene. The animal is also useful for studying the ability of a variety of compounds to act as modulators of NHL activity or expression *in vivo* or, by providing cells for culture, *in vitro*. It is reiterated that as used herein, a modulator is a compound that causes a change in the expression or activity of NHL, or causes a change in the effect of the interaction of NHL with its ligand(s), or other protein(s). In an embodiment of this aspect, the animal is used in a method for the preparation of a further animal which lacks a functional native NHL gene. In another embodiment, the animal of this aspect is used in a method to prepare an animal which expresses a non-native NHL.

gene in the absence of the expression of a native NHL gene. In particular embodiments the non-human animal is a mouse. In further embodiments the non-native NHL is a wild-type human NHL which is disclosed herein, or any other biologically equivalent form of human NHL gene as also disclosed herein.

5 In reference to the transgenic animals of this invention, reference is made to transgenes and genes. As used herein, a transgene is a genetic construct including a gene. The transgene is integrated into one or more chromosomes in the cells in an animal by methods known in the art. Once integrated, the transgene is carried in at least one place in the chromosomes of a transgenic animal. Of course, a gene is a  
10 nucleotide sequence that encodes a protein, such as human or mouse NHL. The gene and/or transgene may also include genetic regulatory elements and/or structural elements known in the art.

Another aspect of the invention is a non-human animal embryo deficient for native NHL expression. This embryo is useful in studying the effects of the lack of  
15 NHL on the developing animal. In particular embodiments the animal is a mouse. The animal embryo is also useful as a source of cells lacking a functional native NHL gene. The cells are useful in *in vitro* culture studies in the absence of NHL.

An aspect of this invention is a method to obtain an animal in which the cells lack a functional gene NHL native to the animal. The method includes providing a  
20 gene for an altered form of the NHL gene native to the animal in the form of a transgene and targeting the transgene into a chromosome of the animal at the place of the native NHL gene. The transgene can be introduced into the embryonic stem cells by a variety of methods known in the art, including electroporation, microinjection, and lipofection. Cells carrying the transgene can then be injected into blastocysts  
25 which are then implanted into pseudopregnant animals. In alternate embodiments, the transgene-targeted embryonic stem cells can be coincubated with fertilized eggs or morulae followed by implantation into females. After gestation, the animals obtained are chimeric founder transgenic animals. The founder animals can be used in further embodiments to cross with wild-type animals to produce F1 animals heterozygous for the altered NHL gene. In further embodiments, these heterozygous animals can be  
30 interbred to obtain the non-viable transgenic embryos whose somatic and germ cells are homozygous for the altered NHL gene and thereby lack a functional NHL gene. In other embodiments, the heterozygous animals can be used to produce cells lines. In preferred embodiments, the animals are mice.

A further aspect of the present invention is a transgenic non-human animal which expresses a non-native NHL on a native NHL null background. In particular embodiments, the null background is generated by producing an animal with an altered native NHL gene that is non-functional, *i.e.* a knockout. The animal can be heterozygous (*i.e.*, having a different allelic representation of a gene on each of a pair of chromosomes of a diploid genome) or homozygous (*i.e.*, having the same representation of a gene on each of a pair of chromosomes of a diploid genome) for the altered NHL gene and can be hemizygous (*i.e.*, having a gene represented on only one of a pair of chromosomes of a diploid genome) or homozygous for the non-native NHL gene. In preferred embodiments, the animal is a mouse. In particular embodiments the non-native NHL gene can be a wild-type or mutant allele including those mutant alleles associated with a disease. In further embodiments, the non-native NHL is a human NHL. In a further embodiment the non-native NHL gene is operably linked to a promoter. As used herein, operably linked is used to denote a functional connection between two elements whose orientation relevant to one another can vary. In this particular case, it is understood in the art that a promoter can be operably linked to the coding sequence of a gene to direct the expression of the coding sequence while placed at various distances from the coding sequence in a genetic construct.

An aspect of this invention is a method of producing transgenic animals having a transgene including a non-native NHL gene on a native NHL null background. The method includes providing transgenic animals of this invention whose cells are heterozygous for a native gene encoding a functional NHL protein and an altered native NHL gene. These animals are crossed with transgenic animals of this invention that are hemizygous for a transgene including a non-native NHL gene to obtain animals that are both heterozygous for an altered native NHL gene and hemizygous for a non-native NHL gene. The latter animals are interbred to obtain animals that are homozygous or hemizygous for the non-native NHL and are homozygous for the altered native NHL gene. In particular embodiments, cell lines are produced from any of the animals produced in the steps of the method.

The transgenic animals and cells of this invention are useful in the determination of the *in vivo* function of a non-native NHL in the central nervous system and in other tissues of an animal. The animals are also useful in studying the tissue and temporal specific expression patterns of a non-native NHL throughout the

animals. The animals are also useful in determining the ability for various forms of wild-type and mutant alleles of a non-native NHL to rescue the native NHL null deficiency. The animals are also useful for identifying and studying the ability of a variety of compounds to act as modulators of the expression or activity of a non-native NHL *in vivo*, or by providing cells for culture, for *in vitro* studies.

As used herein, a "targeted gene" or "Knockout" (KO) is a DNA sequence introduced into the germline of a non-human animal by way of human intervention, including but not limited to, the methods described herein. The targeted genes of the invention include nucleic acid sequences which are designed to specifically alter cognate endogenous alleles. An altered NHL gene should not fully encode the same NHL as native to the host animal, and its expression product can be altered to a minor or great degree, or absent altogether. In cases where it is useful to express a non-native NHL gene in a transgenic animal in the absence of a native NHL gene we prefer that the altered NHL gene induce a null lethal knockout phenotype in the animal. However a more modestly modified NHL gene can also be useful and is within the scope of the present invention.

A type of target cell for transgene introduction is the embryonic stem cell (ES). ES cells can be obtained from pre-implantation embryos cultured *in vitro* and fused with embryos (Evans et al., 1981, *Nature* 292:154-156; Bradley et al., 1984, *Nature* 309:255-258; Gossler et al., 1986, *Proc. Natl. Acad. Sci. USA* 83:9065-9069; and Robertson et al., 1986 *Nature* 322:445-448). Transgenes can be efficiently introduced into the ES cells by a variety of standard techniques such as DNA transfection, microinjection, or by retrovirus-mediated transduction. The resultant transformed ES cells can thereafter be combined with blastocysts from a non-human animal. The introduced ES cells thereafter colonize the embryo and contribute to the germ line of the resulting chimeric animal (Jaenisch, 1988, *Science* 240: 1468-1474).

The methods for evaluating the targeted recombination events as well as the resulting knockout mice are readily available and known in the art. Such methods include, but are not limited to DNA (Southern) hybridization to detect the targeted allele, polymerase chain reaction (PCR), polyacrylamide gel electrophoresis (PAGE) and Western blots to detect DNA, RNA and protein.

The following examples are provided to illustrate the present invention without, however, limiting the same hereto.

## EXAMPLE 1

## Characterization of DNA Molecules Encoding NHL

*M68/DcR3 identification* - The human osteoprotegerin (OPG) sequence (Acc. # U94332), which is a member of the TNFR-related family, was used to searched Genbank using the programs TBLASTN and TFASTX3 to identify novel gene family members. Two EST sequences (GenBank Acc. # AA155701 and AA025672) were identified that showed sequence similarities to the cysteine repeats of the OPG sequence. These EST sequences were then used to identify additional EST sequences, which formed a single EST cluster (GenBank Acc. #s aa577603, aa603704, aa613366, aa158406, w67560, aa325843, aa155646, aa025673, aa514270, m91489). Two clones were further characterized, which were derived from colon tumor and germ cell tumor libraries (Research Genetics, Inc). DNA sequence analysis revealed two alternatively spliced forms of the 5'-end UTR of M68/DcR3. The M68/DcR3 open reading frame was confirmed by sequence analysis of clones obtained by PCR cloning from a normal human cDNA library (Clontech).

*M68/DcR3 BAC identification and sequencing* - To further delineate the gene structure of M68/DcR3, genomic DNA was obtained using a human "Down to the Well"™ genomic bacterial artificial chromosome (BAC) library (Genome Systems, Inc.) according to the manufacturer's protocol. Two sets of PCR primers, C68.36F: 5'-CACAGGTTTCAGCATGTTTGTGCGTC-3' (SEQ ID NO:4) and C68.275R: 5'-CACAGTCCCTGCTGGCCTCTGTCTA-3' (SEQ ID NO:5), and E68.715F: 5'-CAGGACATCTCCATCAAGAGGCTGC-3' (SEQ ID NO:6) and E68.972R: 5'-AATAAGAGGGGGCCAGGATCAGTGC-3' (SEQ ID NO:7), were used to carry out PCR reactions to identify positive wells that contained the full-length M68/DcR3 gene. The PCR conditions used were 94°C for 9min, 35 cycles of (94°C, 30 sec., 68°C 3 min.) followed by 72°C for 10 min. Two positive BAC clones were identified and characterized by restriction digestion and BAC-end sequence analyses, of which hbm168 was selected for shotgun sequencing.

A shot-gun library for BAC hbm168 was constructed using a conventional strategy. Briefly, two 150-ml bacterial cultures were combined and purified using a modified protocol of the plasmid-Maxi kit (QIAGEN) followed by CsCl gradient purification. After butanol extraction and isopropanol precipitation, BAC DNA was nebulized at 10 psi for 60 seconds to generate randomly sheared fragments.



Following ethanol precipitation, the fragments were end-repaired using T4 polymerase (Promega) and BstXI adaptors (Invitrogen) were ligated overnight. Removal of excess, unligated adaptors and size selection was performed using a cDNA sizing column (Life Technologies, Inc.) to generate genomic fragments in the size range of 1500 to 3000 bp. Adaptor ligated fragments were cloned into a modified pBlueScript SK<sup>+</sup> vector (Stratagene) and transformed in XL2-Blue ultracompetent cells (Stratagene). Approximately 1000 clones were isolated, plasmids were purified using the Turbo miniprep kits (QIAGEN), and both plasmid ends were sequenced with the BigDye terminator kits (Perkin-Elmer). Sequence data were assembled using Phred/Phrap/Consed where single-stranded and gap regions were closed using a directed sequencing strategy.

*NHL identification and sequencing* – The genomic clone for the NHL gene was obtained and sequenced. The transcript was identified through exon prediction using GRAIL2 and sequence alignment to a contiguous 4.5 kilobase region of chromosome 4 (88% sequence identity). The complete exon structure of NHL was subsequently confirmed by RT-PCR analysis. The exon structure was confirmed by RT-PCR using polyA RNA from a human colorectal adenocarcinoma cell line, SW480 (Clontech). Primers were designed based on the genomic sequence that were predicted to be exons. RT-PCR reaction were carried out with SW480 polyA RNA using standard conditions with TaqGold Enzyme at 94°C for 12min, 35 cycles of (94°C, 30 sec., 60°C, 30 sec., and 68°C 2-6 min.) followed by 68°C for 7 min. Most sequence confirmation was accomplished by RT-PCR, although first junction between exon 1 and 2 was confirmed by 5'RACE and junctions between exon 26-29 were by RCCA. The primers used were as follows:

25	<u>Junction of Exons</u>	<u>Confirmed by Primers</u>
	H01/H02	hdkw (5'RACE)
	H02/H03	hdiy,hdiz
	H03-H09	hdid,hdie,hdja,hdjb
	H09-H13	hdja,hdie
30	H13-H18	hdje,hdjf
	H18-H23	hdjg,hdjh
	H23-H26	hdji,hdj
	H26-H29	hdkv,r543(RCCA)
	H29-H31	hdij,hdmu,hdnd,hdne

H31/H32	hdij,hdmu
H32/H34	hdip,hdil,hdmv,hdik,hkli
H34/H35	hdng,hdnh

- 5 HDID - 5'-GTGAATGGCATCCTGGAGAG-3' (SEQ ID NO:8);  
 HDIE - 5'-GTCTCCAGGCAGCTCAACAG-3' (SEQ ID NO:9);  
 HDIJ - 5'-ACCCTGTCCCTCCTGTCTGA-3' (SEQ ID NO:10);  
 HDIY - 5'-AGACCCTAAGATGTTCCGAG-3' (SEQ ID NO:11);  
 HDIZ - 5'-GATGACCTGTGTGAGTTGCG-3' (SEQ ID NO:12);  
 10 HDJA - 5'-CGCAACTCACACAGGTCATC-3' (SEQ ID NO:13);  
 HDJB - 5'-GGAGTCAGGTCAAAGGATGC-3' (SEQ ID NO:14);  
 HDJC - 5'-GCATCCTTTGACCTGACTCC-3' (SEQ ID NO:15);  
 HDJD - 5'-GGTCTGAAACGTGATCTGGG-3' (SEQ ID NO:16);  
 HDJE - 5'-CCCAGATCACGTTTCAGACC-3' (SEQ ID NO:17);  
 15 HDJF - 5'-CGATGATGTGTGGGTTCTCC-3' (SEQ ID NO:18);  
 HDJG - 5'-GGAGAACCCACACATCATCG-3' (SEQ ID NO:19);  
 HDJH - 5'-CGTGTCTGAGAAGTCCAGCC-3' (SEQ ID NO:20);  
 HDJI - 5'-GGCTGGACTTCTCAGACACG-3' (SEQ ID NO:21);  
 HDJJ - 5'-ACAGCATCTTCTCCACGCAC-3' (SEQ ID NO:22);  
 20 HFMU - 5'-AGTCCTCTGGCTTTGCAGTG-3' (SEQ ID NO:23);  
 HDKV - 5'-TGTGCGTGGAGAAGATGCTG-3' (SEQ ID NO:24);  
 HDKW - 5'-GGCTGGAAGGGAAGTCTAC-3' (SEQ ID NO:25);  
 HDND - 5'-TGGTTCAGGTGCTCTTGGGG-3' (SEQ ID NO:26);  
 HDNE - 5'-CGTGAAGCAGGAGTTGAGCC-3' (SEQ ID NO:27);  
 25 HDIK - 5'-ATCTTGCTCTGGGTCTTCCC-3' (SEQ ID NO:28);  
 HDIL - 5'-CACTGCAAAGCCAGAGGACT-3' (SEQ ID NO:29);  
 HDIP - 5'-ATAAGCAAGACGACGACCTC-3' (SEQ ID NO:30);  
 HDLI - 5'-CTATTCTGTTGGGTGGGTTC-3' (SEQ ID NO:31);  
 HDMV - 5'-CGTGCCTCCTGTGCTTACCC-3' (SEQ ID NO:32);  
 30 HDNG - 5'-CAGACCCCAAGGTAGCTCAG-3' (SEQ ID NO:33);  
 HDNH - 5'-GGAAGACCCAGAGCAAGATC-3' (SEQ ID NO:34).

Amplified product were subject to direct sequencing after purification from an agarose gel or cloned into a TOPO PCR cloning vector (Invitrogen) for sequencing.

Multiple sequence alignment of NHL to known helicases showed that NHL contains  
5 all the seven critical helicase domains. BLAST analysis of the predicted 1,219 amino acid sequence (see Figure 2, SEQ ID NO:2) reveal an approximately 26% sequence identity and 48% sequence similarity to the RAD3/ERCC2 gene family of DNA helicases (see Figure 3). Review of this sequence data shows that two partial human cDNA clones (Acc. No. a1080127 and ab029011) are deposited. No. a1080127 covers  
10 exon 25-35 while ab029011 covers exons 9-35. Ab029011 starts at amino acid 240 of the full length human NHL protein disclosed herein, but also differs at exon 35 and appears to be a fusion transcript with M68. This cDNA was isolated from brain tissue, which has been known to express rare transcripts.

15

## EXAMPLE 2

### Northern Analysis of human NHL Expression

Messenger RNA (mRNA) obtained from human brain, heart, skeletal muscle, colon, thymus, spleen, kidney, liver, small intestine, placenta, lung, and peripheral blood leukocytes. Two µg of polyA<sup>+</sup> RNA were run on each lane a denaturing  
20 formaldehyde 1% agarose gel, and transferred to a charged-modified nylon membrane. The probe was made using a 733 bp fragment derived from 1174-1907 nt of the NHL cDNA. This fragment was labeled via the <sup>32</sup>P dCTP random priming method (Ambion). Hybridization was carried in ExpressHyb (Clontech) according to the manufacturer's protocol except for the final wash, which was at 55°C. Membranes  
25 were exposed to X-ray film with intensifying screen at -80°C overnight. The Northern data is presented in Figure 4. Note hybridization of the NHL probe to an approximately 4.4 kb transcript. The 7.5 kb transcript may suggest an alternative splicing of the NHL RNA.

## EXAMPLE 3

## Chromosomal localization

To map the position of M68/NHL in the human genome, primers C68.36F and  
5 C68.275R, were used to carry out PCR reactions to 93 clones of the MIT GeneBridge  
4 panel (Research Genetics) and results were submitted to MIT for analysis.  
M68/DcR3 was mapped to the extreme telomere of chromosome 20, at 20q13.3, 28cR  
from D20S173 with a lod score of 13. An analogous procedure was also carried out  
with the 83 clones of the Stanford G3 radiation hybrid panel, with PCR results  
10 submitted to the Stanford Genome Center for analysis. Analysis using another pair of  
PCR primers specific to NHL yielded the same result. For fluorescence in situ (FISH)  
analysis, the normal human male fibroblast cell line, L136 (Coriell Cell Repository,  
Camden, NJ) was arrested in mitosis with colcemid (10  $\mu$ g/ml). A human  
chromosome 20  $\alpha$ -satellite probe (Vysis, Downers Grove, IL) was directly labeled  
15 with Spectrum Orange dUTP and was used to identify chromosome 20. The M68  
BAC clone was directly labeled with SpectrumGreen dUTP by nick translation  
(Vysis). Slides were counterstained with DAPI stain and viewed under an Olympus  
microscope with narrow blue and DAPI/TRITC filters. Fifty metaphase cells were  
scored to verify that the M68 probe was located on the same chromosome as the  
20 Human Chromosome 20 probe. Radiation hybrid chromosomal mapping reconfirms  
that it is linked to M68 locus, at 20q13.3.

## WHAT IS CLAIMED IS:

1. A purified DNA molecule encoding a mammalian NHL protein.

2. A purified DNA molecule of claim 1 encoding a human NHL protein

5 which comprises the amino acid sequence

MPKIVLNGVT VDFPFQPYKC QQEYMTKVLE CLQQKVNIGL ESPTGTGKTL CLLCTTLAWR  
 EHLRDGISAR KIAERAQGEL FPDRALSSWG NAAAAAGDPI ACYTDIPKII YASRTHSQLT  
 QVINELRNTS YRPKVCVLGS REQLCIHPEV KKQESNHLQI HLCRKKVASR SCHFYNNVEE  
 KSLEQELASP ILDIEDLVKS GSKHRVCPYY LSRNLKQQAD IIFMPYNYLL DAKSRRAHNI  
 10 DLKGTVVIFD EAHNVEKMCE ESASFDLTPH DLASGLDVID QVLEEQTAA QQGEHPPEFS  
 ADSPSPGLNM ELEDIAKLKM ILLRLEGAI D AVELPGDDSG VTKPGSYIFE LFAEAQITFQ  
 TKGCILDSLD QIIQHLAGRA GVFTNTAGLQ KLADIIQIVF SVDPSEGSPG SPAGLGALQS  
 YKVHIHPDAG HRRTAQRSDA WSTTAARKRG KVLSYWCFSP GHSMHELVRQ GVRSLILTSG  
 TLAPVSSFAL EMQIPFPVCL ENPHIIDKHQ IWVGVPVRGP DGAQLSSAFD RRFSEECCLSS  
 15 LGKALGNIR VVPYGLLIFF PSYPVMEKSL EFWRARDLAR KMEALKPLFV EPRSKGSFSE  
 TISAYYARVA APGSTGATFL AVCGRKASEG LDFSDTNGRG VIVTGLPYPP RMDPRVVLKM  
 QFLDEMKGQG GAGGQFLSGQ EWYRQQASRA VNQAIGRVIR HRQDYGAVFL CDHRFAFADA  
 RAQLPSWVRP HVRVYDNFGH VIRDDVAQFFR VAERTMPAPA PRATAPSVRG EDAVSEAKSP  
 GPFFSTRKAK SLDLHVPSLK QRSSGSPAAG DPESLVCVEY EQEPVVARQR PRGLLALEH  
 20 SEQRAGSPGE EQAHSCSTLS LLSEKRPAEE PRGGRKKIRL VSHPEEPVAG AQTDRAKLFM  
 VAVKQELSQA NFATFTQALQ DYKGSDDFAA LAACLGPLFA EDPKKHNLQ GFYQFVRPHH  
 KQQFEEVCIQ LTGRGCGYRP EHSIPRRQRA QPVLDPGTGR APDPKLTVST AAAQQLDPQE  
 HLNQGRPHLS PRPPPTGDPG SQPWGSGVP RAGKQGQHAV SAYLADARRA LGSAGCSQLL  
 AALTAYKQDD DLDKVLAVLA ALTTAKPEDF PLLHRFSMFV RPHHKQRFSSQ TCTDLTGPRY  
 25 PGMEPPGPQE ERLAVPPVLT HRAPOGPSPR SEKTGKTQSK ISSFLRQSPA GTVGAGGEDA  
 GPSQSSGPPH GPAASEWGL\* (SEQ ID NO:2).

3. An expression vector for expressing a NHL protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 2.

30

4. A host cell which expresses a recombinant NHL protein wherein said host cell contains the expression vector of claim 3.

5. A process for expressing a NHL protein in a recombinant host cell, comprising:

- (a) transfecting the expression vector of claim 3 into a suitable host cell; and,
- 5 (b) culturing the host cells of step (a) under conditions which allow expression of said NHL protein from said expression vector.

6. A purified DNA molecule encoding a human NHL protein which consists of the amino acid sequence

```

10 MPKIVLNGVT VDFPFQPYKC QQEYMTKVLE CLQQKVNGIL ESPTGTGKTL CLLCTTLAWR
EHLRDGISAR KIAERAQGEL FPDRLSSWG NAAAAAGDPI ACYTDIPKII YASRTHSQLT
QVINELRNTS YRPKVCVLGS REQLCIHPEV KKQESNHLQI HLCRKKVASR SCHFYNNVEE
KSLEQELASP ILDIEDLVKS GSKHRVCPYY LSRNLKQQAD IIFMPYNYLL DAKSRRAHNI
DLKGTVVIFD EAHNVEKMCE ESASFDLTPH DLASGLDVID QVLEEQTAA QQGEHPPEFS
15 ADSPSPGLNM ELEDIAKLKM ILLRLEGAID AVELPGDDSG VTKPGSYIFE LFAEAQITFQ
TKGCILDSLD QIIQHLAGRA GVFTNTAGLQ KLADIIQIVF SVDPSEGSPG SPAGLGALQS
YKVHIHPDAG HRTAQQRSDA WSTTAARKRG KVLSYWCFSP GHSMHELVRQ GVRSLILTSG
TLAPVSSFAL EMQIPFPVCL ENPHIIDKHQ IWVGVPVRGP DGAQLSSAFD RRFSEECSS
LGKALGNIR VVPYGLLIFF PSYPVMEKSL EFWRARDLAR KMEALKPLFV EPRSKGSFSE
20 TISAYYARVA APGSTGATFL AVCRGKASEG LDFSDTNGRG VIVTGLPYPP RMDPRVVLKM
QFLDEMKGQG GAGGQFLSGQ EWYRQQASRA VNQAIGRVIR HRQDYGAVFL CDHRFAFADA
RAQLPSWVRP HVRVYDNFGH VIRDAQFFR VAERTMPAPA PRATAPSVRG EDAVSEAKSP
GPPFFSTRKAK SLDLHVPSLK QRSSGSPAAG DPESLCEVEY EQEPVPARQR PRGLLALEH
SEQRAGSPGE EQAHSCSTLS LLSEKRPAEE PRGGRKKIRL VSHPEEPVAG AQTDRAKLFM
25 VAVKQELSQA NFATFTQALQ DYKGSDDFAA LAACLGPLFA EDPKKHNLQ GFYQFVRPHH
KQQFEEVCIQ LTGRGCGYRP EHSIPRRQRA QPVLDPGTGR APDPKLTVST AAAQQLDPQE
HLNQGRPHLS PRPPPTGDPG SQPQWGSVP RAGKQGQHAV SAYLADARRA LGSAGCSQLL
AALTAYKQDD DLDKVLAVLA ALTTAKPEDF PLLHRFSMFV RPHHKQRFSSQ TCTDLTGRPY
PGMEPPGPQE ERLAVPPVLT HRAQPQPSR SEKTGKTQSK ISSFLRQRPA GTVGAGGEDA
30 GPSQSSGPPH GPAASEWGL* (SEQ ID NO:2).

```

7. An expression vector for expressing a NHL protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 6.

8. A host cell which expresses a recombinant NHL protein wherein said host cell contains the expression vector of claim 7.

9. A process for expressing a NHL protein in a recombinant host cell,  
5 comprising:  
    (a) transfecting the expression vector of claim 7 into a suitable host cell; and,  
    (b) culturing the host cells of step (a) under conditions which allow  
expression of said NHL protein from said expression vector.

10. A purified DNA molecule which comprises the nucleotide sequence as  
10 set forth in SEQ ID NO:1.

11. An expression vector for expressing a NHL protein in a recombinant  
host cell wherein said expression vector comprises a DNA molecule of claim 10.

15

12. A host cell which expresses a recombinant NHL protein wherein said  
host cell contains the expression vector of claim 11.

13. A purified DNA molecule which consists of the nucleotide sequence as  
20 set forth in SEQ ID NO:1.

14. An expression vector for expressing a NHL protein in a recombinant  
host cell wherein said expression vector comprises a DNA molecule of claim 13.

25 15. A host cell which expresses a recombinant NHL protein wherein said  
host cell contains the expression vector of claim 14.

16. A purified DNA molecule of claim 13 which consists of the nucleotide  
sequence from about nucleotide 828 to about nucleotide 4587, as set forth in SEQ ID  
30 NO:1.

17. An expression vector for expressing a NHL protein in a recombinant  
host cell wherein said expression vector comprises a DNA molecule of claim 16.

18. A host cell which expresses a recombinant NHL protein wherein said host cell contains the expression vector of claim 17.

19. A substantially purified NHL protein which comprises the amino acid sequence as set forth in SEQ ID NO:2.

20. A substantially purified NHL protein which consists of the amino acid sequence as set forth in SEQ ID NO:2.

21. A substantially purified NHL protein which comprises the amino acid sequence as set forth in SEQ ID NO:2, wherein said protein is a product of a DNA expression vector comprising SEQ ID NO:1 and contained within a recombinant host cell.

22. A method of identifying modulators of NHL activity, comprising:  
(a) combining a test compound with a NHL protein, wherein NHL comprises the amino acid sequence as set forth in SEQ ID NO:2; and,  
(b) measuring the effect of the test compound on the NHL protein.

23. An isolated DNA molecule which comprises the nucleotide sequence as set forth in SEQ ID NO:3.

24. An isolated DNA molecule of claim 20 which comprises from about nucleotide 47000 to about nucleotide 85500 of SEQ ID NO:3.

25. An isolated DNA molecule of claim 23 which comprises from about nucleotide 47095 to about nucleotide 85316 of SEQ ID NO:3.

26. A substantially purified NHL protein of claim 21 wherein said protein is a product of a DNA expression vector comprising from about nucleotide 828 to nucleotide 4587, as set forth in SEQ ID NO:1, and contained within a recombinant host cell.



1/12

AGTCAGCCCT GCTGCCAGCC AGTGCCGGGT GCTGGGGACT CAGGGAGGCC CGCCGGGACC ACTGCGGGAC  
AGTGAGCCGA GCAGAAGCTG GAACGCAGGA GAGGAAGGAG AGGGGGCGGT CAGGGCTCTC AGGAGCCGGG  
TCCTGGGCAA GCGCAGCCG TTTTCAAATT TTCAGGAAAG CGGTGCGTC AACTCGAGC AGTAAAAAGA  
TGCTCTGGG GAGGAGGCC GTGCAGCTCT CCGGGCAATG GTGGTGGCTC GGCCTAGAGA GGCGGTAGTG  
GAACGCAGAC CCTGGTGGGG GAATGACATC AAGGGAGGAG ACGGGCGGGA CCCAGATTT CTGCTGTGG  
GCGATGGAAG TGAGGTTTAC TGGCCAGCGG AGCCGGACAC AGAACGCGCA AAACGCCGTG TAGGCCTGGA  
GGAGCCGAAG AGCAGGCGGA CCCCTCCGC GGGGGAACAG TTTCCGCCG GAGCACAAG CAACGGACCG  
GAAGTGGGG GCGGAAGTGC AGTGGGCTCA GCGCCGACTG CGCGCTCTG CCCGCAAAA CTCTGAGCTG  
GCTGACAGCT GGGGACGGGT GCGGCCCCC GACTGGAGTC GGTGAGTTC CTGAGGGACC CCGTTCTGG  
AAGGTTCCGC GCGGAGACAA GTGAGCAGTC TGTGCCATAG GGATTCTCGA AGAGAACAGC GTTGTGTCCC  
AGTGCACATG CTCGCATCGC TTACCAGGAG TGCCCGAGAC CCTAAGATGT TCGGAGTGGT TTTTTCGCAC  
AGACCCGAAT AGCCTGCCCC TCAGCCACGC TCTGTGCCCT TCTGAGAACA GGCTGATATG CCCAAGATAG  
TCCTGAATGG TGTGACCGTA GACTTCCCTT TCCAGCCCTA CAAATGCCAA CAGGAGTACA TGACCAAGGT  
CCTGGAATGT CTGCAGCAGA AGGTGAATGG CATCCTGGAG AGCCTACGG GTACAGGGAA GACGCTGTGC  
CTGCTGTGCA CCACGCTGGC CTGGCGAGAA CACCTCCGAG ACGGCATCTC TGCCCGCAAG ATTGCCGAGA  
GGGCGCAAGG AGAGCTTTTC CCGGATCGGG CTTGTGATC CTGGGGCAAC GCTGCTGCTG CTGCTGGAGA  
CCCCATAGCT TGCTACACGG ACATCCCAA GATTATTAC GCCTCCAGGA CCCACTCGCA ACTCACACAG  
GTCATCAACG AGCTTCGGAA CACCTCCTAC CGGCCTAAGG TGTGTGTGCT GGGCTCCCGG GAGCAGCTGT  
GCATCCATCC TGAGGTGAAG AAACAAGAGA GTAACCATCT ACAGATCCAC TTGTGCCGTA AGAAGGTGGC  
AAGTCGCTCC TGTCATTTCT ACAACAACGT AGAAGAAAA AGCCTGGAGC AGGAGCTGGC CAGCCCCATC  
CTGGACATTG AGGACTTGGT CAAGAGCGGA AGCAAGCACA GGGTGTGCC TTAATACCTG TCCCGGAACC  
TGAAGCAGCA AGCCGACATC ATATTCATGC CGTACAATTA CTTGTTGGAT GCCAAGAGCC GCAGAGCACA  
CAACATTGAC CTGAAGGGGA CAGTCGTGAT CTTTGACGAA GCTCACAACG TGGAGAAGAT GTGTGAAGAA  
TCGGCATCCT TTGACCTGAC TCCCCATGAC CTGGCTTCAG GACTGGACGT CATAGACCAG GTGCTGGAGG  
AGCAGACCAA GGCAGCGCAG CAGGGTGAGC CCCACCCGGA GTTCAGCGCG GACTCCCCCA GCCCAGGGCT  
GAACATGGAG CTGGAAGACA TTGCAAAGCT GAAGATGATC CTGCTGCGCC TGGAGGGGGC CATCGATGCT  
GTTGAGCTGC CTGGAGACGA CAGCGGTGTC ACCAAGCCAG GGAGCTACAT CTTTGAGCTG TTTGCTGAAG  
CCCAGATCAC GTTTCAGACC AAGGGCTGCA TCCTGGACTC GCTGGACCAG ATCATCCAGC ACCTGGCAGG  
ACGTGCTGGA GTGTTACCA ACACGGCCGG ACTGCAGAAG CTGGCGGACA TTATCCAGAT TGTGTTCACT  
GTGGACCCCT CCGAGGGCAG CCTGGTTCC CCAGCAGGGC TGGGGGCCCT ACAGTCTAT AAGGTGCACA  
TCCATCCTGA TGCTGGTAC CCGAGGACGG CTCAGCGGTC TGATGCCTGG AGCACCCTG CAGCCAGAAA  
GCGAGGGAAG GTGCTGAGCT ACTGGTGCTT CAGTCCCGGC CACAGCATGC ACGAGCTGGT CCGCCAGGGC  
GTCCGCTCCC TCATCCTTAC CAGCGGCACG CTGGCCCCGG TGTCCTCCTT TGCTCTGGAG ATGCAGATCC  
CTTTCCAGT CTGCCTGGAG AACCACACA TCATCGACAA GCACCAGATC TGGGTGGGG TCCTCCCCAG  
AGGCCCCGAT GGAGCCAGT TGAGCTCCGC GTTTGACAGA CGGTTTTCCG AGGAGTGCTT ATCCTCCCTG  
GGGAAGGCTC TGGGCAACAT CGCCCGCGTG GTGCCCTATG GGCTCCTGAT CTTCTTCCCT TCCTATCCTG  
TCATGGAGAA GAGCCTGGAG TTCTGGCGGG CCCGCACTT GGCCAGGAAG ATGGAGGCGC TGAAGCCGCT  
GTTTGTGGAG CCCAGGAGCA AAGGCAGCTT CTCGAGACC ATCAGTGCTT ACTATGCAAG GGTGCGCGC  
CCTGGGTCCA CCGGCGCCAC CTTCTGGCG GTCTGCCGG GCAAGGCCAG CGAGGGGCTG GACTTCTCAG  
ACACGAATGG CCGTGGTGTG ATTGTCACGG GCCTCCCGTA CCCCCACGC ATGGACCCCC GGGTTGTCTT  
CAAGATGCAG TTCCTGGATG AGATGAAGGG CCAGGTGGG GCTGGGGGCC AGTTCCCTCT TGGGCAGGAG  
TGGTACCGG AGCAGGCGTC CAGGGCTGTG AACCAGGCCA TCGGGCGAGT GATCCGGCAC CGCCAGGACT  
ACGGAGCTGT CTTCTCTGT GACCACAGGT TCGCCTTTC CGACGCAAGA GCCCAACTGC CCTCCTGGGT  
GCGTCCCCAC GTCAGGGTGT ATGACAACCT TGGCCATGTC ATCCGAGACG TGGCCAGTT CTTCCGTGTT  
GCCGAGCGAA CTATGCCAGC GCCGGCCCC CGGGCTACAG CACCCAGTGT GCGTGGAGAA GATGCTGTCA  
GCGAGGCCAA GTCGCTGGC CCCTTCTTCT CCACCAGGAA AGCTAAGAGT CTGGACCTGC ATGTCCCCAG  
CCTGAAGCAG AGGTCTCAG GGTCAACAGC TGCCGGGGAC CCCGAGAGTA GCCTGTGTGT GGAGTATGAG  
CAGGAGCCAG TTCCTGCCG GCAGAGGCC AGGGGCTGC TGGCCGCCCT GGAGCACAGC GAACAGCGGG

FIG. 1A

SUBSTITUTE SHEET (RULE 26)

2/12

CGGGGAGCCC TGGCGAGGAG CAGGCCCACA GCTGCTCCAC CCTGTCCCTC CTGTCTGAGA  
AGAGGCCGGC AGAAGAACCG CGAGGAGGGA GGAAGAAGAT CCGGCTGGTC AGCCACCCGG  
AGGAGCCCGT GGCTGGTGCA CAGACGGACA GGGCCAAGCT CTTTCATGGTG GCCGTGAAGC  
AGGAGTTGAG CCAAGCCAAC TTTGCCACCT TCACCCAGGC CCTGCAGGAC TACAAGGGTT  
CCGATGACTT CGCCGCCCTG GCCGCCTGTC TCGGCCCCCT CTTTGCTGAG GACCCCAAGA  
AGCACAACTT GCTCCAAGGC TTCTACCACT TTGTGCGGCC CCACCATAAG CAGCAGTTTG  
AGGAGGTCTG TATCCAGCTG ACAGGACGAG GCTGTGGCTA TCGGCCTGAG CACAGCATTC  
CCCGAAGGCA GCGGGCACAG CCGGTCCTGG ACCCCACTGG AAGAACGGCG CCGGATCCCA  
AGCTGACCGT GTCCACGGCT GCAGCCCAGC AGCTGGACCC CCAAGAGCAC CTGAACCAGG  
GCAGGCCCCA CCTGTCGCCC AGGCCACCCC CAACAGGAGA CCCTGGCAGC CAACCACAGT  
GGGGGTCTGG AGTGCCGAGA GCAGGGAAGC AGGGCCAGCA CGCCGTGAGC GCCTACCTGG  
CTGATGCCCC CAGGGCCCTG GGGTCCGCGG GCTGTAGCCA ACTCTTGGA GCGCTGACAG  
CCTATAAGCA AGACGACGAC CTCGACAAGG TGCTGGCTGT GTTGCCGCC CTGACCACTG  
CAAAGCCAGA GGACTTCCCC CTGCTGCACA GGTTCAGCAT GTTTGTGCGT CCACACCACA  
AGCAGCGCTT CTCACAGACG TGCACAGACC TGACCGGCCG GCCCTACCCG GGCATGGAGC  
CACCGGGACC CCAGGAGGAG AGGCTTGCCG TGCTCCTGT GCTTACCCAC AGGGCTCCCC  
AACCAGGCCC CTCACGGTCC GAGAAGACCG GGAAGACCCA GAGCAAGATC TCGTCCTTCC  
TTAGACAGAG GCCAGCAGGG ACTGTGGGGG CGGGCGGTGA GGATGCAGGT CCCAGCCAGT  
CCTCAGGACC TCCCCACGGG CCTGCAGCAT CTGAGTGGGG CCTCTAGGAT GTGCCAGCC  
TGCCACACCG CCTCCAGGAA GCAGAGCGTC ATGCAGGTCT TCTGGCCAGA GCCCCAGTGA  
GTGCCACGG AGGCCCCCAG CACACCCAAC GTGGCTTGAT CACCTGCCTG TCCAGCTCTG  
GTGGGCCAAG AACCACCCA ACAGAATAGG CCAGCCCATG CCAGCCGGCT TGGCCCGCTG  
CAGGCCTCAG GCAGGCGGGG CCCATGGTTG GTCCCTGCGG TGGGACCGGA TCTGGGCCTG  
CCTCTGAGAA GCCCTGAGCT ACCTTGGGGT CTGGGGTGGG TTTCTGGGAA AGTGCTTCCC  
CAGAACTTCC CTGGCTCCTG GCCTGTGAGT GGTGCCACAG GGGCACCCCA GCTGAGCCCC  
TCACCGGGAA GGAGGAGACC CCCGTGGGCA CGTGTCCACT TTTAATCAGG GGACAGGGCT  
CTCTAATAAA GCTGCTGGCA GTGCCC (SEQ ID NO:1).

FIG. 1B

3/12

MPKIVLNGVT VDFPFQPYKC QQEYMTKVLE CLQQKVNGIL ESPTGTGKTL CLLCTTLAWR  
EHLRDGISAR KIAERAQGEL FPDRLSSWG NAAAAAGDPI ACYTDIPKII YASRTHSQLT  
QVINELRNTS YRPKVCVLGS REQLCIHPEV KKQESNHLQI HLCRKKVASR SCHFYNNVEE  
KSLEQELASP ILDIEDLVKS GSKHRVCPYY LSRNLKQQAD IIFMPYNYLL DAKSRRAHNI  
DLKGTVVIFD EAHNVEKMCE ESASFDLTPH DLASGLDVID QVLEEQTAA QGEPHPEFS  
ADSPSPGLNM ELEDIAKLKM ILLRLEGAID AVELPGDDSG VTKPGSYIFE LFAEAQITFQ  
TKGCILDSLD QIIQHLAGRA GVFTNTAGLQ KLADIIQIVF SVDPSSESPG SPAGLGALQS  
YKVHIHPDAG HRRTAQRSDA WSTTAARKRG KVLSYWCFSP GHSMHELVRQ GVRSLILTSG  
TLAPVSSFAL EMQIPFPVCL ENPHIIDKHQ IWVGVPVPRGP DGAQLSSAFD RRFSEECSS  
LGKALGNIAR VVPYGLLIFF PSYPVMEKSL EFWRARDLAR KMEALKPLFV EPRSKGSFSE  
TISAYYARVA APGSTGATFL AVCRGKASEG LDFSOTNGRG VIVTGLPYPP RMDPRVVLKM  
QFLDEMKQGQ GAGGQFLSGQ EWYRQQASRA VNQAIGRVIR HRQDYGAVFL CDHRFAFADA  
RAQLPSWVRP HVRVYDNFGH VIRDVAQFFR VAERTMPAPA PRATAPSVRG EDAVSEAKSP  
GPFFSTRKAK SLDLHVPSLK QRSSGSPAAG DPESLCEVEY EQEPVPARQR PRGLLALEH  
SEQRAGSPGE EQAHSCSTLS LLSEKRPAEE PRGGRKKIRL VSHPEEPVAG AQTDRAKLFM  
VAVKQELSQA NFATFTQALQ DYKGSDDFAA LAACLGPLFA EDPKKHNLQ GFYQFVRPHH  
KQQFEEVCIQ LTGRGCGYRP EHSIPRRORA QPVLDPTGRT APDPKLTVST AAAQQLDPQE  
HLNQGRPHLS PRPPPTGDPG SQPQWGSQVP RAGKQGQHAV SAYLADARRA LGSAGCSQLL  
AALTAYKQDD DLDKVLAVLA ALTTAKPEDF PLLHRFSMFV RPHHKQRFSSQ TCTDLTGRPY  
PGMEPPGPQE ERLAVPPVLT HRAPQGPSR SEKTGKTQSK ISSFLRQSPA GTVGAGGEDA  
GPSQSSGPPH GPAASEWGL\* (SEQ ID NO:2).

FIG.2

4/12

D  
I

QVKNP-----SIKLIYCSRTYPEIEQATEEARRVLQYRNSEMGEESSPKTLOMSMSRRNLC  
QMAYP-----EHRKLIYCSRTMSEIEKALVELEILMDYRTKELGYQED--FRGLCLTSRKNLC  
QMAYP-----EHRKLIYCSRTMSEIDKALAEKRLMAYRTSQLGYEEP--FLGLCLTSRKNLC  
QRAYPL--EVTIKLIYCSRTYPEIEKVIIEELRKLLNFYEKQEGEKL P--FLGLALSRKNLC  
REHLRDCISARKIAERAQCELFPDRALSSWGNAAWAAGDP[IACYTD--IPKIIYASRTHSQ

I	Q	P	V	S	E	R	D	G	K	V	D	A	L	R	E	L	T	S	S	W	N	R	E	S	P	T	S	E	---	---	---	K	K	F	F	E	N	F																		
L	H	P	E	V	S	K	E	R	K	G	T	V	D	E	K	C	R	R	M	T	N	G	A	K	R	K	L	E	D	P	E	---	---	---	A	N	V	E	L	C	E	Y	H	E	N	L										
L	H	P	S	V	R	R	E	K	N	G	N	V	D	A	R	C	R	S	L	T	A	G	F	V	R	E	Q	R	L	A	G	---	---	---	M	D	V	P	T	C	E	F	H	D	N	L										
I	H	P	E	V	T	P	L	R	F	G	K	D	V	D	G	K	C	H	S	L	T	A	S	Y	V	R	A	Q	Y	Q	H	---	---	---	T	S	L	P	H	C	R	F	X	E	E	F										
L	T	Q	V	I	N	E	L	R	N	T	S	Y	R	P	K	V	C	V	L	G	S	R	E	L	C	I	H	E	V	K	K	Q	E	S	N	H	L	Q	I	H	L	C	R	K	K	V	A	S	R	S	C	H	E	N	K	V

FIG. 3A

RepD  
RAD3  
RAD15  
XP\_GroupD  
NHL

RepD  
RAD3  
RAD15  
XP\_GroupD  
NHL

RepD  
RAD3  
RAD15  
XP\_GroupD  
NHL

5/12

RepD  
RAD3  
RAD15  
XP\_GroupD  
NHL

SNGKIL-EGVYSLEDLKEYLKHQMCPYFSRHMLNFANIVIFSXYLLDPKIASLI  
 YNIEVDYLPKGVFSFKLLKYCEEKTLCPYFIVRRMISLCNLIYSYHLLDPKIAERV  
 DLEPHSLISNGVWTLDDITEYGEKTTTRCPYFTVRRMLPFCNVLIYSYHLLDPKIAERV  
 DAHGRVPLPAGTYNLDLCKALGRQGWCPYFARYSILHANVVVSYHLLDPKIAADLV  
 EKSLQQLASPLDIEDLVKSGSKHRVCPYLSRNKQQADIFMPYNYLLDAKSRRAH

II

RepD  
RAD3  
RAD15  
XP\_GroupD  
NHL

SSSFPSNSIVFDEAHNIDNVQINALSINIDNKLDTSSKNIAKINKQIEDIKKVDKRL  
 SNEVSKDSIVFDEAHNIDNVQIESLSLDTTDLRRATRGANALDERISEVRKVD SQKL  
 SREL SKDCIVFDEAHNIDNVQIESLSLDTTESSLRKASKSLSEQKVNEVKQSDSKKL  
 SKELARKAVVVFDEAHNIDNVQIDSMNVNLTTRRTLDRCQGNLETLQKTVLRRIKETDQRL  
 NIDKGTIVYTFDEAHNVEKMCESABFDTTPHDLASGLDVITDQVLEEQTKAAQCP--

RepD  
RAD3  
RAD15  
XP\_GroupD  
NHL

KDEYQRLVNGLARSGSTRA--DETTSDPVL PNDVIQEAMPGNIRKPSIFISLRRVVDYL  
 QDEYEKLVQGLHSADITQEEPFVETPVLPQDLLTEAIPGNIRRAEHFVSFLKRKIEYL  
 QDEYQKLVRGLQDANAAND-EDQFMANPVL PEDVLKEAMPGNIRRAEHFIAFLKRFVEYL  
 RDEYRRLVEGLREASAARE-TDAHLANPVL PDEVLQEAMPGSIRTAEHFLCFRRKLEYV  
 HPEFSADSPSPGLNMELEDIAKLKMIILLRLEGALDAVELPCDDSGVTKPGSYIFEFAEA

FIG. 3B

KSR LK S Q M L L S E S P L A F L Q C L Y -- H A T Q I S S R T L R F C S S R L S S L R T L R I N D V N Q F S G - I  
 K T R M K V L H V I S E T P K S F L Q H L K -- Q L T P I E R K P L R F C S E R L S L V R T L E V T E V E D F T A - L  
 K T R M K V L H V I A E T P S F L Q H V K -- D I T P I D K K P L R F C A E R L T S L V R A L Q I S L V E D F H S - L  
 K W R L R V Q H V N Q E S P P A F L S G L A -- Q R V C I Q R K P L R F C A E R L R S L H T L E I T D L A D F S P - L  
 Q I T F Q T K G C L D S L D Q I I Q H L A G R A G V F T I N T A G L Q K L A D I I Q I V E S V D P S E G S P G S P A G L

REPD  
 RAD3  
 RAD15  
 XP\_GroupD  
 NHL

S L I A D F A T L V G T Y N -- N G F L I I I E P Y Y Q R Q N N T Y D Q I F Q F C L D A S I G M K P I F D K - Y R S V  
 K D I A T F A T L I S T Y E -- E G F L L I I E P Y E I E N A V P N P I M R F T C L D A S I A I K P V F E R - F S S V  
 Q Q V A F A T L V A T Y E -- R G F I L I L E P F E I E N A T V P N P I L R F S C L D A S I A I K P V F E R - F R S V  
 T L L A N F A T L V S T Y A -- K G F T I I I E P F D D R T P T I A N P I L H F S C M D A S L A I K P V F E R - F Q S V  
 G A L Q S Y K V H I H P D A G H I R T A Q R S D A M S T I A A R K R G K V L S Y M C F S P G H S M H E L V R Q G V R S L

REPD  
 RAD3  
 RAD15  
 XP\_GroupD  
 NHL

V I I T S G T L S P L D I Y T K M L N F R P T V V E R L T M S L N R N C I C P C I L T R G S D Q I S I S T K F D V R S D T  
 I I T S G T L S P L D M Y P R M L N F K T V L Q K S Y A M T L A K K S F L P M I I T K G S D Q V A I S S R F E I R N D P  
 I I T S G T L S P L D M Y P K M L Q F N T V M Q E S Y G M S L A R N C F L P M V V T R G S D Q V A I S S K F E A R N D P  
 I I T S G T L S P L D I Y P K I L D F H P V T M A T F T M T L A R V C L C P M I I G R C N D Q V A I S S K F E T R E D I  
 I I T S G T L A P V S S F A L E M Q I P F P V C L E N P H I I D K H Q T W V G V V P R C P D C A Q L S S A F D R R F S E

REPD  
 RAD3  
 RAD15  
 XP\_GroupD  
 NHL

FIG. 3C

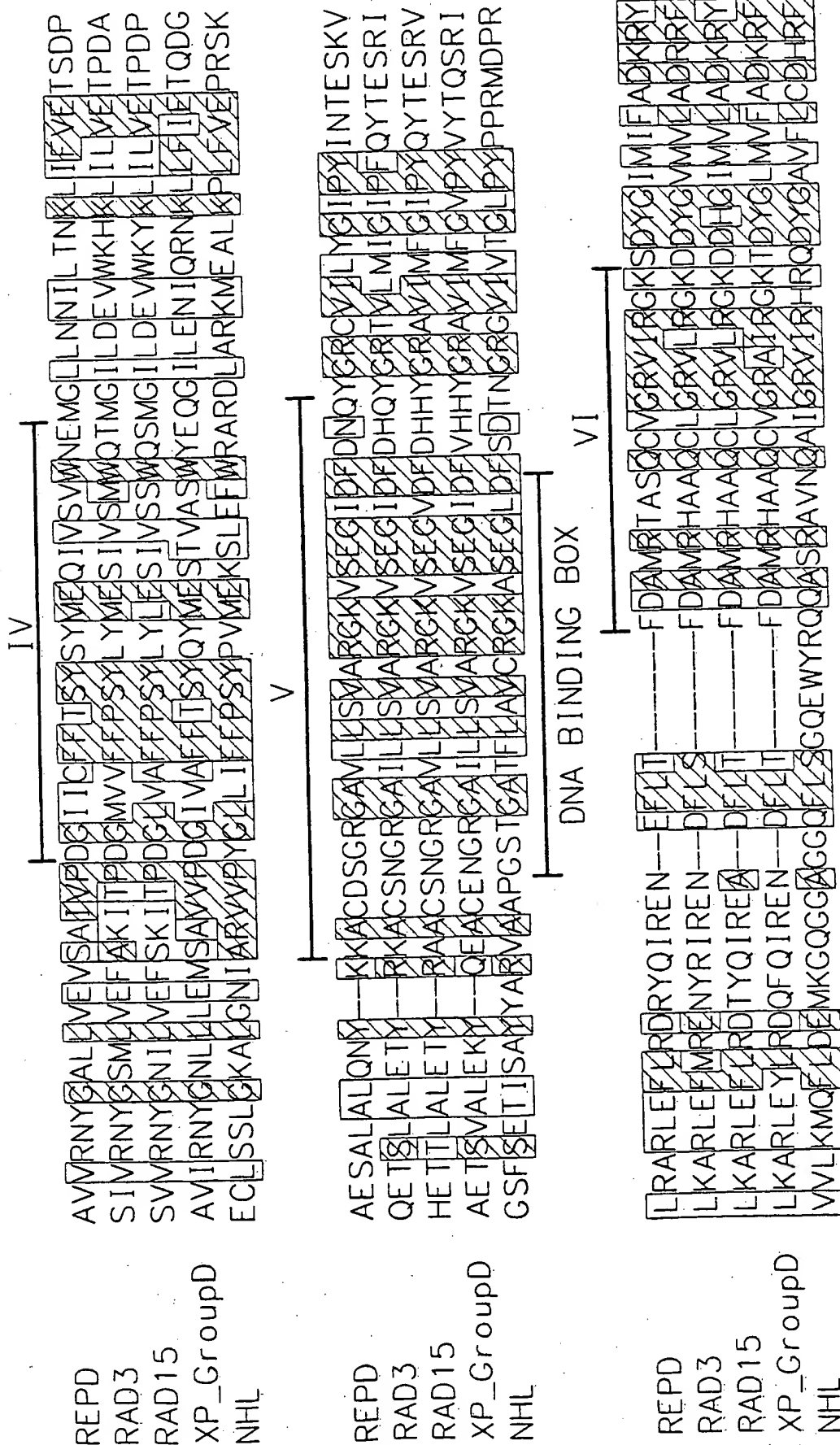


FIG. 3D





9/12

AALEHSEQRAGSPGEEQAHSCSTLSLLSEKRPAEEPRGGRKKIRLVSHPEEPVAGAQTD  
AKLFMVAVKQELSQANFATFTQALQDYKGSDDFAALAAACLGPLFAEDPKKHNLQGFYQF  
VRPHHKQQFEEVC IQLTGRCCGYRPEHSIPRRQRAQPVLDPTGRTAPDPKLTVSTAAQQ  
LDPQEHNLNQGPHLSRPPPTGDPGSGPQWCGVPRAGKQGHAVSAYLADARRALGSAG  
CSQLLAALTAYKQDDLDKVLAVLAALTTAKPEDFPLHRFSMFVRPHHKQRF SQTCTDL  
TGRPYPGMEPPGPQEERLAVPPVLTHRAPQGPSPRSEKTGKTQSKISSF LRQRPAGTVGA  
GGEDAGPSQSSGPPHGPAASEWGL (SEQ ID NO:2)

NHL  
NHL  
NHL  
NHL  
NHL  
NHL  
NHL

FIG. 3F

10/12

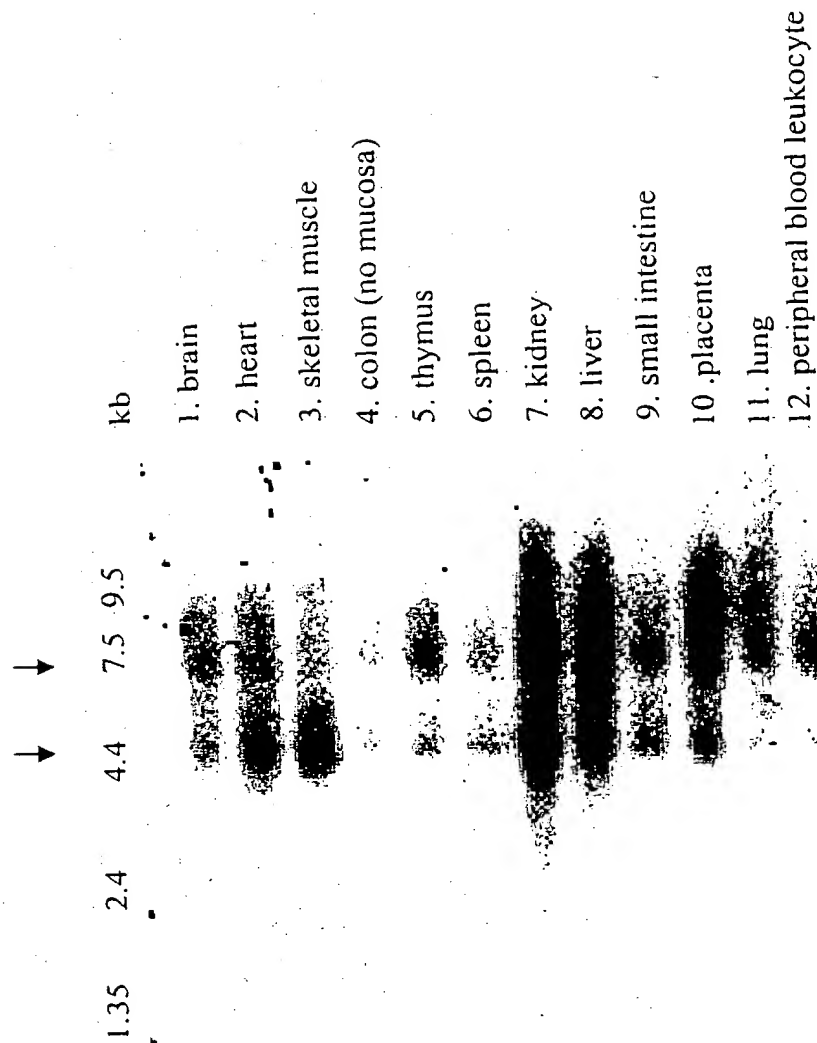


FIG.4

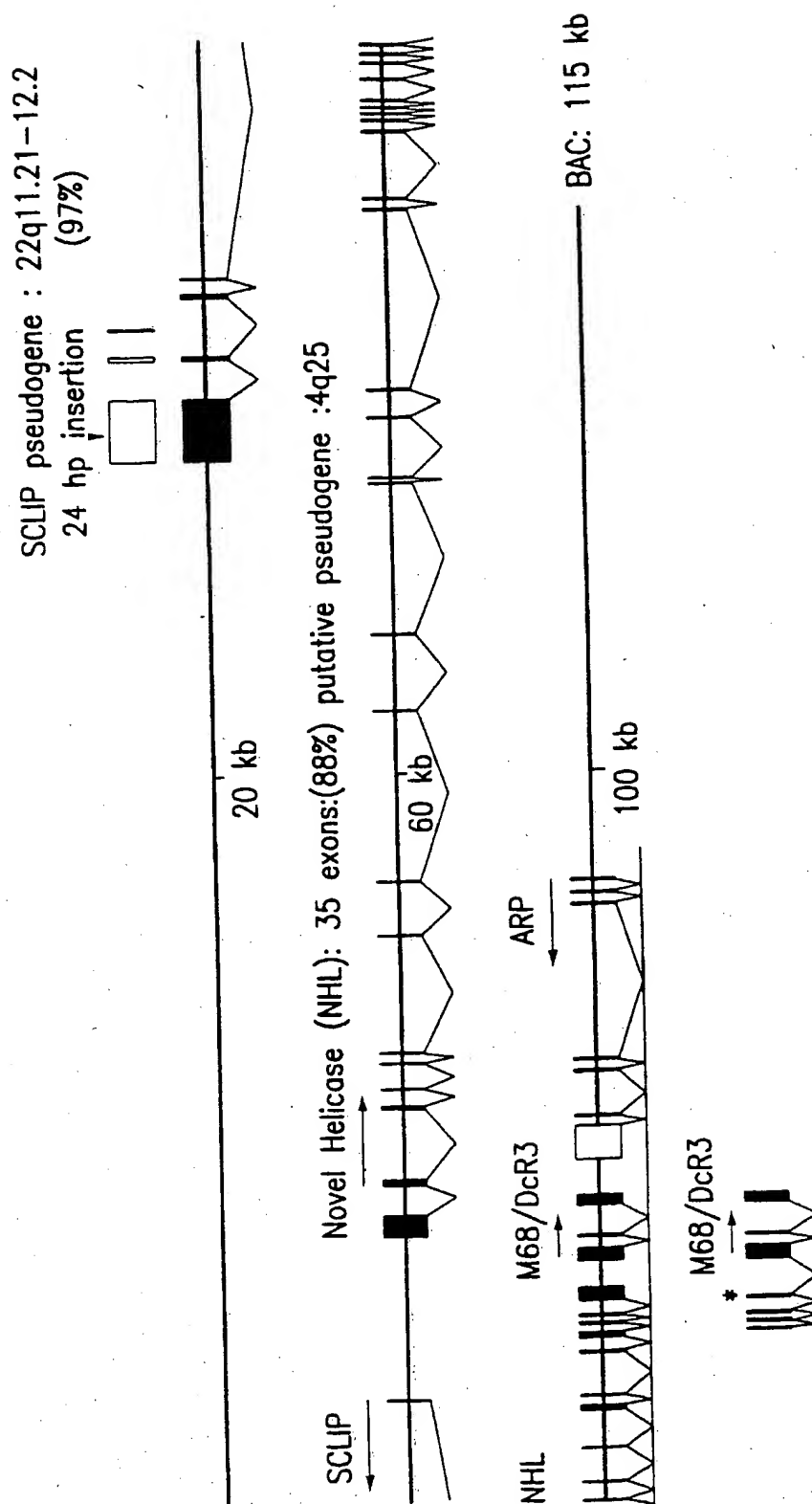


FIG. 5A

12/12

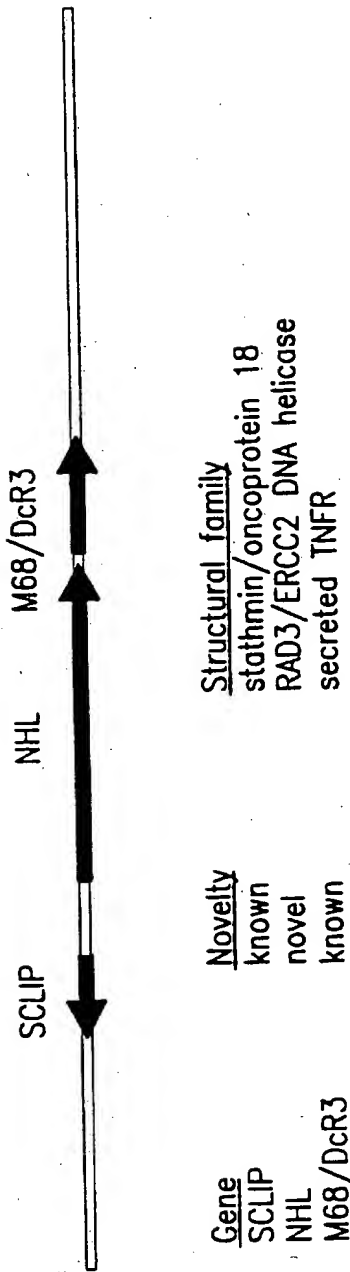


FIG.5B

## SEQUENCE LISTING

<110> APPLICANT: Merck & Co., Inc.

<120> TITLE: DNA MOLECULES ENCODING HUMAN NHL, A DNA  
HELICASE

<130> DOCKET/FILE REFERENCE: 20585 PCT

<160> NUMBER OF SEQUENCES: 38

<170> SOFTWARE: FastSEQ for Windows Version 4.0

<210> SEQ ID NO:1

<211> LENGTH: 4946

<212> TYPE: DNA

<213> ORGANISM: Homo sapien

<220> FEATURE:

<221> NAME/KEY: CDS

<222> LOCATION: (828)...(4487)

<400> SEQ ID NO:1

```

agtcagccct gctgccagcc agtgccgggt gctggggact cagggaggcc cgccgggacc      60
actgcgggac agtgagccga gcagaagctg gaacgcagga gaggaaggag agggggcggt      120
cagggtcttc aggagccggg tcctgggcaa ggcgcagccg ttttcaaatt ttcaggaaag      180
cggtcggctc acactcgagc agtaaaaaga tgccctctgg gaggaggccc gtgcagctct      240
ccgggcaatg gtggtggctc ggcctagaga ggcggtagtg gaacgcagac cctggtgggg      300
gaatgacatc aaggagagag acgggcggga cccagattt ctgcctgtgg gcgatggaag      360
tgaggttcac tggccagcgg agccggacac agaacgcgca aaacgccgtg taggcctgga      420
ggagccgaag agcaggcgga cccctccgc ggggaacag tttccgccgg gagcaciaag      480
caacggaccg gaagtggggg gcggaagtgc agtgggctca gcgccactg cgcgcctctg      540
cccgcgaaaa ctctgagctg gctgacagct ggggacgggt ggccggccctc gactggagtc      600
ggttgagttc ctgaggggacc ccggttctgg aaggttcgcc gcggagacaa gtgagcagtc      660
tgtgccatag ggattctcga agagaacagc gttgtgtccc agtgacatg ctgcgcatcg      720
ttaccaggag tgcccagagc cctaagatgt tcggagtggg tttttcgcac agacccgaat      780
agcctgcccc tcagccacgc tctgtgccct tctgagaaca ggctgat atg ccc aag      836
                                         Met Pro Lys
                                         1

```

```

ata gtc ctg aat ggt gtg acc gta gac ttc cct ttc cag ccc tac aaa      884
Ile Val Leu Asn Gly Val Thr Val Asp Phe Pro Phe Gln Pro Tyr Lys
   5              10              15

```

```

tgc caa cag gag tac atg acc aag gtc ctg gaa tgt ctg cag cag aag      932
Cys Gln Gln Glu Tyr Met Thr Lys Val Leu Glu Cys Leu Gln Gln Lys
  20              25              30              35

```

```

gtg aat ggc atc ctg gag agc cct acg ggt aca ggg aag acg ctg tgc      980
Val Asn Gly Ile Leu Glu Ser Pro Thr Gly Thr Gly Lys Thr Leu Cys
          40              45              50

```

```

ctg ctg tgc acc acg ctg gcc tgg cga gaa cac ctc cga gac ggc atc      1028
Leu Leu Cys Thr Thr Leu Ala Trp Arg Glu His Leu Arg Asp Gly Ile
          55              60              65

```

```

tct gcc cgc aag att gcc gag agg gcg caa gga gag ctt ttc ccg gat      1076
Ser Ala Arg Lys Ile Ala Glu Arg Ala Gln Gly Glu Leu Phe Pro Asp
          70              75              80

```

cgg gcc ttg tca tcc tgg ggc aac gct gct gct gct gct gga gac ccc Arg Ala Leu Ser Ser Trp Gly Asn Ala Ala Ala Ala Gly Asp Pro 85 90 95	1124
ata gct tgc tac acg gac atc cca aag att att tac gcc tcc agg acc Ile Ala Cys Tyr Thr Asp Ile Pro Lys Ile Ile Tyr Ala Ser Arg Thr 100 105 110 115	1172
cac tcg caa ctc aca cag gtc atc aac gag ctt cgg aac acc tcc tac His Ser Gln Leu Thr Gln Val Ile Asn Glu Leu Arg Asn Thr Ser Tyr 120 125 130	1220
cgg cct aag gtg tgt gtg ctg ggc tcc cgg gag cag ctg tgc atc cat Arg Pro Lys Val Cys Val Leu Gly Ser Arg Glu Gln Leu Cys Ile His 135 140 145	1268
cct gag gtg aag aaa caa gag agt aac cat cta cag atc cac ttg tgc Pro Glu Val Lys Lys Gln Glu Ser Asn His Leu Gln Ile His Leu Cys 150 155 160	1316
cgt aag aag gtg gca agt cgc tcc tgt cat.ttc tac aac aac gta gaa Arg Lys Lys Val Ala Ser Arg Ser Cys His Phe Tyr Asn Asn Val Glu 165 170 175	1364
gaa aaa agc ctg gag cag gag ctg gcc agc ccc atc ctg gac att gag Glu Lys Ser Leu Glu Gln Glu Leu Ala Ser Pro Ile Leu Asp Ile Glu 180 185 190 195	1412
gac ttg gtc aag agc gga agc aag cac agg gtg tgc cct tac tac ctg Asp Leu Val Lys Ser Gly Ser Lys His Arg Val Cys Pro Tyr Tyr Leu 200 205 210	1460
tcc cgg aac ctg aag cag caa gcc gac atc ata ttc atg ccg tac aat Ser Arg Asn Leu Lys Gln Gln Ala Asp Ile Ile Phe Met Pro Tyr Asn 215 220 225	1508
tac ttg ttg gat gcc aag agc cgc aga gca cac aac att gac ctg aag Tyr Leu Leu Asp Ala Lys Ser Arg Arg Ala His Asn Ile Asp Leu Lys 230 235 240	1556
ggg aca gtc gtg atc ttt gac gaa gct cac aac gtg gag aag atg tgt Gly Thr Val Val Ile Phe Asp Glu Ala His Asn Val Glu Lys Met Cys 245 250 255	1604
gaa gaa tcg gca tcc ttt gac ctg act ccc cat gac ctg gct tca gga Glu Glu Ser Ala Ser Phe Asp Leu Thr Pro His Asp Leu Ala Ser Gly 260 265 270 275	1652
ctg gac gtc ata gac cag gtg ctg gag gag cag acc aag gca gcg cag Leu Asp Val Ile Asp Gln Val Leu Glu Glu Gln Thr Lys Ala Ala Gln 280 285 290	1700
cag ggt gag ccc cac ccg gag ttc agc gcg gac tcc ccc agc cca ggg Gln Gly Glu Pro His Pro Glu Phe Ser Ala Asp Ser Pro Ser Pro Gly 295 300 305	1748
ctg aac atg gag ctg gaa gac att gca aag ctg aag atg atc ctg ctg Leu Asn Met Glu Leu Glu Asp Ile Ala Lys Leu Lys Met Ile Leu Leu 310 315 320	1796

cgc ctg gag ggg gcc atc gat gct gtt gag ctg cct gga gac gac agc Arg Leu Glu Gly Ala Ile Asp Ala Val Glu Leu Pro Gly Asp Asp Ser 325 330 335	1844
ggt gtc acc aag cca ggg agc tac atc ttt gag ctg ttt gct gaa gcc Gly Val Thr Lys Pro Gly Ser Tyr Ile Phe Glu Leu Phe Ala Glu Ala 340 345 350 355	1892
cag atc acg ttt cag acc aag ggc tgc atc ctg gac tgc ctg gac cag Gln Ile Thr Phe Gln Thr Lys Gly Cys Ile Leu Asp Ser Leu Asp Gln 360 365 370	1940
atc atc cag cac ctg gca gga cgt gct gga gtg ttc acc aac acg gcc Ile Ile Gln His Leu Ala Gly Arg Ala Gly Val Phe Thr Asn Thr Ala 375 380 385	1988
gga ctg cag aag ctg gcg gac att atc cag att gtg ttc agt gtg gac Gly Leu Gln Lys Leu Ala Asp Ile Ile Gln Ile Val Phe Ser Val Asp 390 395 400	2036
ccc tcc gag ggc agc cct ggt tcc cca gca ggg ctg ggg gcc tta cag Pro Ser Glu Gly Ser Pro Gly Ser Pro Ala Gly Leu Gly Ala Leu Gln 405 410 415	2084
tcc tat aag gtg cac atc cat cct gat gct ggt cac cgg agg acg gct Ser Tyr Lys Val His Ile His Pro Asp Ala Gly His Arg Arg Thr Ala 420 425 430 435	2132
cag cgg tct gat gcc tgg agc acc act gca gcc aga aag cga ggg aag Gln Arg Ser Asp Ala Trp Ser Thr Thr Ala Ala Arg Lys Arg Gly Lys 440 445 450	2180
gtg ctg agc tac tgg tgc ttc agt ccc ggc cac agc atg cac gag ctg Val Leu Ser Tyr Trp Cys Phe Ser Pro Gly His Ser Met His Glu Leu 455 460 465	2228
gtc cgc cag ggc gtc cgc tcc ctc atc ctt acc agc ggc acg ctg gcc Val Arg Gln Gly Val Arg Ser Leu Ile Leu Thr Ser Gly Thr Leu Ala 470 475 480	2276
ccg gtg tcc tcc ttt gct ctg gag atg cag atc cct ttc cca gtc tgc Pro Val Ser Ser Phe Ala Leu Glu Met Gln Ile Pro Phe Pro Val Cys 485 490 495	2324
ctg gag aac cca cac atc atc gac aag cac cag atc tgg gtg ggg gtc Leu Glu Asn Pro His Ile Ile Asp Lys His Gln Ile Trp Val Gly Val 500 505 510 515	2372
gtc ccc aga ggc ccc gat gga gcc cag ttg agc tcc gcg ttt gac aga Val Pro Arg Gly Pro Asp Gly Ala Gln Leu Ser Ser Ala Phe Asp Arg 520 525 530	2420
cgg ttt tcc gag gag tgc tta tcc tcc ctg ggg aag gct ctg ggc aac Arg Phe Ser Glu Glu Cys Leu Ser Ser Leu Gly Lys Ala Leu Gly Asn 535 540 545	2468
atc gcc cgc gtg gtg ccc tat ggg ctc ctg atc ttc ttc cct tcc tat Ile Ala Arg Val Val Pro Tyr Gly Leu Leu Ile Phe Phe Pro Ser Tyr 550 555 560	2516

cct gtc atg gag aag agc ctg gag ttc tgg cgg gcc cgc gac ttg gcc Pro Val Met Glu Lys Ser Leu Glu Phe Trp Arg Ala Arg Asp Leu Ala 565 570 575	2564
agg aag atg gag gcg ctg aag ccg ctg ttt gtg gag ccc agg agc aaa Arg Lys Met Glu Ala Leu Lys Pro Leu Phe Val Glu Pro Arg Ser Lys 580 585 590 595	2612
ggc agc ttc tcc gag acc atc agt gct tac tat gca agg gtt gcc gcc Gly Ser Phe Ser Glu Thr Ile Ser Ala Tyr Tyr Ala Arg Val Ala Ala 600 605 610	2660
cct ggg tcc acc ggc gcc acc ttc ctg gcg gtc tgc cgg ggc aag gcc Pro Gly Ser Thr Gly Ala Thr Phe Leu Ala Val Cys Arg Gly Lys Ala 615 620 625	2708
agc gag ggg ctg gac ttc tca gac acg aat ggc cgt ggt gtg att gtc Ser Glu Gly Leu Asp Phe Ser Asp Thr Asn Gly Arg Gly Val Ile Val 630 635 640	2756
acg ggc ctc ccg tac ccc cca cgc atg gac ccc cgg gtt gtc ctc aag Thr Gly Leu Pro Tyr Pro Pro Arg Met Asp Pro Arg Val Val Leu Lys 645 650 655	2804
atg cag ttc ctg gat gag atg aag ggc cag ggt ggg gct ggg ggc cag Met Gln Phe Leu Asp Glu Met Lys Gly Gln Gly Gly Ala Gly Gly Gln 660 665 670 675	2852
ttc ctc tct ggg cag gag tgg tac cgg cag cag gcg tcc agg gct gtg Phe Leu Ser Gly Gln Glu Trp Tyr Arg Gln Gln Ala Ser Arg Ala Val 680 685 690	2900
aac cag gcc atc ggg cga gtg atc cgg cac cgc cag gac tac gga gct Asn Gln Ala Ile Gly Arg Val Ile Arg His Arg Gln Asp Tyr Gly Ala 695 700 705	2948
gtc ttc ctc tgt gac cac agg ttc gcc ttt gcc gac gca aga gcc caa Val Phe Leu Cys Asp His Arg Phe Ala Phe Ala Asp Ala Arg Ala Gln 710 715 720	2996
ctg ccc tcc tgg gtg cgt ccc cac gtc agg gtg tat gac aac ttt ggc Leu Pro Ser Trp Val Arg Pro His Val Arg Val Tyr Asp Asn Phe Gly 725 730 735	3044
cat gtc atc cga gac gtg gcc cag ttc ttc cgt gtt gcc gag cga act His Val Ile Arg Asp Val Ala Gln Phe Phe Arg Val Ala Glu Arg Thr 740 745 750 755	3092
atg cca gcg ccg gcc ccc cgg gct aca gca ccc agt gtg cgt gga gaa Met Pro Ala Pro Ala Pro Arg Ala Thr Ala Pro Ser Val Arg Gly Glu 760 765 770	3140
gat gct gtc agc gag gcc aag tgg cct ggc ccc ttc ttc tcc acc agg Asp Ala Val Ser Glu Ala Lys Ser Pro Gly Pro Phe Phe Ser Thr Arg 775 780 785	3188
aaa gct aag agt ctg gac ctg cat gtc ccc agc ctg aag cag agg tcc Lys Ala Lys Ser Leu Asp Leu His Val Pro Ser Leu Lys Gln Arg Ser 790 795 800	3236



tca ggg tca cca gct gcc ggg gac ccc gag agt agc ctg tgt gtg gag Ser Gly Ser Pro Ala Ala Gly Asp Pro Glu Ser Ser Leu Cys Val Glu 805 810 815	3284
tat gag cag gag cca gtt cct gcc cgg cag agg ccc agg ggg ctg ctg Tyr Glu Gln Glu Pro Val Pro Ala Arg Gln Arg Pro Arg Gly Leu Leu 820 825 830 835	3332
gcc gcc ctg gag cac agc gaa cag cgg gcg ggg agc cct ggc gag gag Ala Ala Leu Glu His Ser Glu Gln Arg Ala Gly Ser Pro Gly Glu Glu 840 845 850	3380
cag gcc cac agc tgc tcc acc ctg tcc ctc ctg tct gag aag agg ccg Gln Ala His Ser Cys Ser Thr Leu Ser Leu Leu Ser Glu Lys Arg Pro 855 860 865	3428
gca gaa gaa ccg cga gga ggg agg aag aag atc cgg ctg gtc agc cac Ala Glu Glu Pro Arg Gly Gly Arg Lys Lys Ile Arg Leu Val Ser His 870 875 880	3476
ccg gag gag ccc gtg gct ggt gca cag acg gac agg gcc aag ctc ttc Pro Glu Glu Pro Val Ala Gly Ala Gln Thr Asp Arg Ala Lys Leu Phe 885 890 895	3524
atg gtg gcc gtg aag cag gag ttg agc caa gcc aac ttt gcc acc ttc Met Val Ala Val Lys Gln Glu Leu Ser Gln Ala Asn Phe Ala Thr Phe 900 905 910 915	3572
acc cag gcc ctg cag gac tac aag ggt tcc gat gac ttc gcc gcc ctg Thr Gln Ala Leu Gln Asp Tyr Lys Gly Ser Asp Asp Phe Ala Ala Leu 920 925 930	3620
gcc gcc tgt ctc ggc ccc ctc ttt gct gag gac ccc aag aag cac aac Ala Ala Cys Leu Gly Pro Leu Phe Ala Glu Asp Pro Lys Lys His Asn 935 940 945	3668
ctg ctc caa ggc ttc tac cag ttt gtg cgg ccc cac cat aag cag cag Leu Leu Gln Gly Phe Tyr Gln Phe Val Arg Pro His His Lys Gln Gln 950 955 960	3716
ttt gag gag gtc tgt atc cag ctg aca gga cga ggc tgt ggc tat cgg Phe Glu Glu Val Cys Ile Gln Leu Thr Gly Arg Gly Cys Gly Tyr Arg 965 970 975	3764
cct gag cac agc att ccc cga agg cag cgg gca cag ccg gtc ctg gac Pro Glu His Ser Ile Pro Arg Arg Gln Arg Ala Gln Pro Val Leu Asp 980 985 990 995	3812
ccc act gga aga acg gcg ccg gat ccc aag ctg acc gtg tcc acg gct Pro Thr Gly Arg Thr Ala Pro Asp Pro Lys Leu Thr Val Ser Thr Ala 1000 1005 1010	3860
gca gcc cag cag ctg gac ccc caa gag cac ctg aac cag ggc agg ccc Ala Ala Gln Gln Leu Asp Pro Gln Glu His Leu Asn Gln Gly Arg Pro 1015 1020 1025	3908
cac ctg tcg ccc agg cca ccc cca aca gga gac cct ggc agc caa cca His Leu Ser Pro Arg Pro Pro Pro Thr Gly Asp Pro Gly Ser Gln Pro 1030 1035 1040	3956

cag tgg ggg tct gga gtg ccc aga gca ggg aag cag ggc cag cac gcc Gln Trp Gly Ser Gly Val Pro Arg Ala Gly Lys Gln Gly Gln His Ala 1045 1050 1055	4004
gtg agc gcc tac ctg gct gat gcc cgc agg gcc ctg ggg tcc gcg ggc Val Ser Ala Tyr Leu Ala Asp Ala Arg Arg Ala Leu Gly Ser Ala Gly 1060 1065 1070 1075	4052
tgt agc caa ctc ttg gca gcg ctg aca gcc tat aag caa gac gac gac Cys Ser Gln Leu Leu Ala Ala Leu Thr Ala Tyr Lys Gln Asp Asp Asp 1080 1085 1090	4100
ctc gac aag gtg ctg gct gtg ttg gcc gcc ctg acc act gca aag cca Leu Asp Lys Val Leu Ala Val Leu Ala Ala Leu Thr Thr Ala Lys Pro 1095 1100 1105	4148
gag gac ttc ccc ctg ctg cac agg ttc agc atg ttt gtg cgt cca cac Glu Asp Phe Pro Leu Leu His Arg Phe Ser Met Phe Val Arg Pro His 1110 1115 1120	4196
cac aag cag cgc ttc tca cag acg tgc aca gac ctg acc ggc cgg ccc His Lys Gln Arg Phe Ser Gln Thr Cys Thr Asp Leu Thr Gly Arg Pro 1125 1130 1135	4244
tac ccg ggc atg gag cca ccg gga ccc cag gag gag agg ctt gcc gtg Tyr Pro Gly Met Glu Pro Pro Gly Pro Gln Glu Glu Arg Leu Ala Val 1140 1145 1150 1155	4292
cct cct gtg ctt acc cac agg gct ccc caa cca ggc ccc tca cgg tcc Pro Pro Val Leu Thr His Arg Ala Pro Gln Pro Gly Pro Ser Arg Ser 1160 1165 1170	4340
gag aag acc ggg aag acc cag agc aag atc tcg tcc ttc ctt aga cag Glu Lys Thr Gly Lys Thr Gln Ser Lys Ile Ser Ser Phe Leu Arg Gln 1175 1180 1185	4388
agg cca gca ggg act gtg ggg gcg ggc ggt gag gat gca ggt ccc agc Arg Pro Ala Gly Thr Val Gly Ala Gly Gly Glu Asp Ala Gly Pro Ser 1190 1195 1200	4436
cag tcc tca gga cct ccc cac ggg cct gca gca tct gag tgg ggc ctc Gln Ser Ser Gly Pro Pro His Gly Pro Ala Ala Ser Glu Trp Gly Leu 1205 1210 1215	4484
tag gatgtgccca gcctgccaca ccgcctccag gaagcagagc gtcattgcagg	4537
tcttctggcc agagccccag tgagtgccca cggaggcccc cagcacaccc aacgtggctt	4597
gatcacctgc ctgtccagct ctggtgggcc aagaaccac ccaacagaat aggccagccc	4657
atgccagccg gcttgccccg ctgcaggcct caggcaggcg gggcccatgg ttggtccctg	4717
cgggtgggacc ggatctgggc ctgcctctga gaagccctga gctaccttg ggtctggggt	4777
gggtttcttg gaaagtgtt ccccagaact tccctggctc ctggcctgtg agtggtgcc	4837
caggggcacc ccagctgagc cccctaccgg gaaggaggag acccccgtgg gcacgtgtcc	4897
acttttaatc aggggacagg gctctctaataa agactgctg gcagtggcc	4946

<210> SEQ ID NO:2  
 <211> LENGTH: 1219  
 <212> TYPE: PRT  
 <213> ORGANISM: Homo sapien

<400> SEQ ID NO:2

```

Met Pro Lys Ile Val Leu Asn Gly Val Thr Val Asp Phe Pro Phe Gln
1           5           10           15
Pro Tyr Lys Cys Gln Gln Glu Tyr Met Thr Lys Val Leu Glu Cys Leu
20           25           30
Gln Gln Lys Val Asn Gly Ile Leu Glu Ser Pro Thr Gly Thr Gly Lys
35           40           45
Thr Leu Cys Leu Leu Cys Thr Thr Leu Ala Trp Arg Glu His Leu Arg
50           55           60
Asp Gly Ile Ser Ala Arg Lys Ile Ala Glu Arg Ala Gln Gly Glu Leu
65           70           75           80
Phe Pro Asp Arg Ala Leu Ser Ser Trp Gly Asn Ala Ala Ala Ala Ala
85           90           95
Gly Asp Pro Ile Ala Cys Tyr Thr Asp Ile Pro Lys Ile Ile Tyr Ala
100          105          110
Ser Arg Thr His Ser Gln Leu Thr Gln Val Ile Asn Glu Leu Arg Asn
115          120          125
Thr Ser Tyr Arg Pro Lys Val Cys Val Leu Gly Ser Arg Glu Gln Leu
130          135          140
Cys Ile His Pro Glu Val Lys Lys Gln Glu Ser Asn His Leu Gln Ile
145          150          155          160
His Leu Cys Arg Lys Lys Val Ala Ser Arg Ser Cys His Phe Tyr Asn
165          170          175
Asn Val Glu Glu Lys Ser Leu Glu Gln Glu Leu Ala Ser Pro Ile Leu
180          185          190
Asp Ile Glu Asp Leu Val Lys Ser Gly Ser Lys His Arg Val Cys Pro
195          200          205
Tyr Tyr Leu Ser Arg Asn Leu Lys Gln Gln Ala Asp Ile Ile Phe Met
210          215          220
Pro Tyr Asn Tyr Leu Leu Asp Ala Lys Ser Arg Arg Ala His Asn Ile
225          230          235          240
Asp Leu Lys Gly Thr Val Val Ile Phe Asp Glu Ala His Asn Val Glu
245          250          255
Lys Met Cys Glu Glu Ser Ala Ser Phe Asp Leu Thr Pro His Asp Leu
260          265          270
Ala Ser Gly Leu Asp Val Ile Asp Gln Val Leu Glu Glu Gln Thr Lys
275          280          285
Ala Ala Gln Gln Gly Glu Pro His Pro Glu Phe Ser Ala Asp Ser Pro
290          295          300
Ser Pro Gly Leu Asn Met Glu Leu Glu Asp Ile Ala Lys Leu Lys Met
305          310          315          320
Ile Leu Leu Arg Leu Glu Gly Ala Ile Asp Ala Val Glu Leu Pro Gly
325          330          335
Asp Asp Ser Gly Val Thr Lys Pro Gly Ser Tyr Ile Phe Glu Leu Phe
340          345          350
Ala Glu Ala Gln Ile Thr Phe Gln Thr Lys Gly Cys Ile Leu Asp Ser
355          360          365
Leu Asp Gln Ile Ile Gln His Leu Ala Gly Arg Ala Gly Val Phe Thr
370          375          380
Asn Thr Ala Gly Leu Gln Lys Leu Ala Asp Ile Ile Gln Ile Val Phe
385          390          395          400
Ser Val Asp Pro Ser Glu Gly Ser Pro Gly Ser Pro Ala Gly Leu Gly
405          410          415
Ala Leu Gln Ser Tyr Lys Val His Ile His Pro Asp Ala Gly His Arg
420          425          430

```

Arg Thr Ala Gln Arg Ser Asp Ala Trp Ser Thr Thr Ala Ala Arg Lys  
 435 440 445  
 Arg Gly Lys Val Leu Ser Tyr Trp Cys Phe Ser Pro Gly His Ser Met  
 450 455 460  
 His Glu Leu Val Arg Gln Gly Val Arg Ser Leu Ile Leu Thr Ser Gly  
 465 470 475 480  
 Thr Leu Ala Pro Val Ser Ser Phe Ala Leu Glu Met Gln Ile Pro Phe  
 485 490 495  
 Pro Val Cys Leu Glu Asn Pro His Ile Ile Asp Lys His Gln Ile Trp  
 500 505 510  
 Val Gly Val Val Pro Arg Gly Pro Asp Gly Ala Gln Leu Ser Ser Ala  
 515 520 525  
 Phe Asp Arg Arg Phe Ser Glu Cys Leu Ser Ser Leu Gly Lys Ala  
 530 535 540  
 Leu Gly Asn Ile Ala Arg Val Val Pro Tyr Gly Leu Leu Ile Phe Phe  
 545 550 555 560  
 Pro Ser Tyr Pro Val Met Glu Lys Ser Leu Glu Phe Trp Arg Ala Arg  
 565 570 575  
 Asp Leu Ala Arg Lys Met Glu Ala Leu Lys Pro Leu Phe Val Glu Pro  
 580 585 590  
 Arg Ser Lys Gly Ser Phe Ser Glu Thr Ile Ser Ala Tyr Tyr Ala Arg  
 595 600 605  
 Val Ala Ala Pro Gly Ser Thr Gly Ala Thr Phe Leu Ala Val Cys Arg  
 610 615 620  
 Gly Lys Ala Ser Glu Gly Leu Asp Phe Ser Asp Thr Asn Gly Arg Gly  
 625 630 635 640  
 Val Ile Val Thr Gly Leu Pro Tyr Pro Pro Arg Met Asp Pro Arg Val  
 645 650 655  
 Val Leu Lys Met Gln Phe Leu Asp Glu Met Lys Gly Gln Gly Gly Ala  
 660 665 670  
 Gly Gly Gln Phe Leu Ser Gly Gln Glu Trp Tyr Arg Gln Gln Ala Ser  
 675 680 685  
 Arg Ala Val Asn Gln Ala Ile Gly Arg Val Ile Arg His Arg Gln Asp  
 690 695 700  
 Tyr Gly Ala Val Phe Leu Cys Asp His Arg Phe Ala Phe Ala Asp Ala  
 705 710 715 720  
 Arg Ala Gln Leu Pro Ser Trp Val Arg Pro His Val Arg Val Tyr Asp  
 725 730 735  
 Asn Phe Gly His Val Ile Arg Asp Val Ala Gln Phe Phe Arg Val Ala  
 740 745 750  
 Glu Arg Thr Met Pro Ala Pro Ala Pro Arg Ala Thr Ala Pro Ser Val  
 755 760 765  
 Arg Gly Glu Asp Ala Val Ser Glu Ala Lys Ser Pro Gly Pro Phe Phe  
 770 775 780  
 Ser Thr Arg Lys Ala Lys Ser Leu Asp Leu His Val Pro Ser Leu Lys  
 785 790 795 800  
 Gln Arg Ser Ser Gly Ser Pro Ala Ala Gly Asp Pro Glu Ser Ser Leu  
 805 810 815  
 Cys Val Glu Tyr Glu Gln Glu Pro Val Pro Ala Arg Gln Arg Pro Arg  
 820 825 830  
 Gly Leu Leu Ala Ala Leu Glu His Ser Glu Gln Arg Ala Gly Ser Pro  
 835 840 845  
 Gly Glu Glu Gln Ala His Ser Cys Ser Thr Leu Ser Leu Leu Ser Glu  
 850 855 860  
 Lys Arg Pro Ala Glu Glu Pro Arg Gly Gly Arg Lys Lys Ile Arg Leu  
 865 870 875 880  
 Val Ser His Pro Glu Glu Pro Val Ala Gly Ala Gln Thr Asp Arg Ala  
 885 890 895  
 Lys Leu Phe Met Val Ala Val Lys Gln Glu Leu Ser Gln Ala Asn Phe  
 900 905 910

Ala Thr Phe Thr Gln Ala Leu Gln Asp Tyr Lys Gly Ser Asp Asp Phe  
 915 920 925  
 Ala Ala Leu Ala Ala Cys Leu Gly Pro Leu Phe Ala Glu Asp Pro Lys  
 930 935 940  
 Lys His Asn Leu Leu Gln Gly Phe Tyr Gln Phe Val Arg Pro His His  
 945 950 955 960  
 Lys Gln Gln Phe Glu Glu Val Cys Ile Gln Leu Thr Gly Arg Gly Cys  
 965 970 975  
 Gly Tyr Arg Pro Glu His Ser Ile Pro Arg Arg Gln Arg Ala Gln Pro  
 980 985 990  
 Val Leu Asp Pro Thr Gly Arg Thr Ala Pro Asp Pro Lys Leu Thr Val  
 995 1000 1005  
 Ser Thr Ala Ala Ala Gln Gln Leu Asp Pro Gln Glu His Leu Asn Gln  
 1010 1015 1020  
 Gly Arg Pro His Leu Ser Pro Arg Pro Pro Thr Gly Asp Pro Gly  
 1025 1030 1035 1040  
 Ser Gln Pro Gln Trp Gly Ser Gly Val Pro Arg Ala Gly Lys Gln Gly  
 1045 1050 1055  
 Gln His Ala Val Ser Ala Tyr Leu Ala Asp Ala Arg Arg Ala Leu Gly  
 1060 1065 1070  
 Ser Ala Gly Cys Ser Gln Leu Leu Ala Ala Leu Thr Ala Tyr Lys Gln  
 1075 1080 1085  
 Asp Asp Asp Leu Asp Lys Val Leu Ala Val Leu Ala Ala Leu Thr Thr  
 1090 1095 1100  
 Ala Lys Pro Glu Asp Phe Pro Leu Leu His Arg Phe Ser Met Phe Val  
 1105 1110 1115 1120  
 Arg Pro His His Lys Gln Arg Phe Ser Gln Thr Cys Thr Asp Leu Thr  
 1125 1130 1135  
 Gly Arg Pro Tyr Pro Gly Met Glu Pro Pro Gly Pro Gln Glu Glu Arg  
 1140 1145 1150  
 Leu Ala Val Pro Pro Val Leu Thr His Arg Ala Pro Gln Pro Gly Pro  
 1155 1160 1165  
 Ser Arg Ser Glu Lys Thr Gly Lys Thr Gln Ser Lys Ile Ser Ser Phe  
 1170 1175 1180  
 Leu Arg Gln Arg Pro Ala Gly Thr Val Gly Ala Gly Gly Glu Asp Ala  
 1185 1190 1195 1200  
 Gly Pro Ser Gln Ser Ser Gly Pro Pro His Gly Pro Ala Ala Ser Glu  
 1205 1210 1215  
 Trp Gly Leu

&lt;210&gt; SEQ ID NO:3

&lt;211&gt; LENGTH: 114793

&lt;212&gt; TYPE: DNA

&lt;213&gt; ORGANISM: Homo sapien

&lt;400&gt; SEQ ID NO:3

tgaagagctt	tgaccaagag	gctgtgacga	ggccctacga	ggactctggc	tctcctcctg	60
ctaagcacac	ccaggcaggt	gtcctggcag	atgaggacca	catgcagagc	ctcggccagc	120
ccaccaatgc	ccggatatgc	aagtgaagcc	agcctggacc	ccccggcgag	gcccagcagc	180
accagcccag	gcccgaagaa	cttaagaaat	gaccagtgtc	tgctgtctta	agccaccaag	240
ctctgcggtg	gtttgttagg	ctgcaagcat	ggctaattca	gaaactgcca	gaaacaagca	300
ctgctgtccc	cagcctggga	cacacagcac	cgcctctgcg	tggggagagc	gcacaggtta	360
agggcacaaa	tgccatccca	gacccggctc	ttgtgtgtgg	aagggggccac	tgtgccatga	420
ggcagaggaa	accttggcag	gaccttatgc	cacagcaatt	taaaagagaa	gaaacaggct	480
gggcgtggtg	gtcatgcct	ataatcccag	cactttggga	ggccaagggt	gtggatcact	540
tgaggtcagg	agttcaagac	cagcctggcc	aatatggtga	aaccctgtct	ctacgaaaaa	600
tacaaaattt	aggcaggcgt	ggtggcggtg	gcctgtaatc	cctgctattc	aggaggctga	660
ggcaagagat	ttacttgaac	ccaggaggtg	gaggctgctg	cagtgaagctg	agatcatgcc	720
actgcactcc	agcctgtgtg	acggagtggg	acttgggtctc	aaaaaaaaaa	aaggaaacac	780

atctgactag	tgtgatctcg	caaggaacat	tccagacaca	gtggagctag	aagggttcttc	840
tccaaacaag	gaatccccag	gggatcaaat	tgttttgcac	cggccagaca	tggtggctca	900
agcctgtaac	cccagtgctt	cgggaggctg	aggtgggagg	actgcttgag	tccaggagtt	960
caagactagc	ttgggcaaca	cagtgagagc	ccattagcca	ggcgtgggtg	cacatgcctg	1020
cagtcccagc	actgtactaa	aaatctacac	ggggccgggc	atggtggcac	atgcctgtag	1080
agtcccagct	actcaggagg	ctgaggcagg	acgattcctt	gaaccagga	ggtcacggct	1140
gccatgagcc	gtgactgtgc	cactgcactc	cagtctgtgc	aacagaacga	gactctgttt	1200
cgaaaaacaa	aaaatcattt	catgtctcca	gtttctccac	tggcaaaaga	ctctgtcaag	1260
gtaaaaaatg	gtttctgacc	acagaaatct	aagaaaggaa	aaaatataaa	aaatagaaaa	1320
tttaaaaaag	agatgggtctc	agaataaaga	ccaacctggg	ctatggttgt	cactcttccc	1380
tcacacctta	gaaagctttc	tggccgcatc	tggccaaagg	gccaccctgc	cccatcttgg	1440
atcagtgagg	tgccttcgaa	caagccacct	gccctggagc	ccgtcctgtc	ttgtctgcca	1500
ccgcacgctc	agtaggggag	gggaagtcgc	taggttttag	ttcaccagtc	tctggatcaa	1560
gacgtgccat	aaccaagaag	cccagccac	accagacc	gatgtggcca	caaggggtga	1620
gctgggaagg	cccaggaaaa	ggcgggaggc	ggacgaatgg	aaatgtcatt	ctgtggccac	1680
agaaatgac	tcaacgtttt	gtaacttcct	accaagaggc	agtcttagct	ctgcccttga	1740
accagcactt	ggtgatgtcg	cttgcgctcaa	tcaaggcaac	agaagtgagc	aggaggccca	1800
ctttcctctg	caactgtggg	cttacggggc	aaagaagtcc	aggcctccag	gtggaggatc	1860
acagaccggg	caaagcagag	gagagccacc	cagccgagcc	tacctgtgcc	tcagactgcc	1920
tcctccca	gaccctgtg	gccaaggcca	cccagaccag	caggtccttg	ccaagctgtc	1980
agctgacgac	aggggttgg	gaggccggcc	cagaccagca	gaaccacgaa	ccaaccaaca	2040
gaattaaaa	taataacaac	tatgtcttgt	cttaagccac	taagttttgg	atggtttctt	2100
tctttctttt	tctttttttt	tttcggagac	gcagtctcac	tctgttgccc	aggctggagt	2160
gcagtggcgc	aatcttggct	cactgcaagc	tctgcccccc	ggattcacgc	cattcccctg	2220
cctcagcctc	ctgagtaact	gggactacag	gtgcctgcca	ttgggtgttt	tcttaaacag	2280
caaaagaaaa	ctgacacaat	cataaacaga	gcaagcaaga	gaacttggca	attatttctt	2340
ctctacttct	cactgttctt	caaagagtta	actcaagcat	aagatgtgag	caaattcttt	2400
taacatccta	gaaaaaaagc	tcctactcag	tgttcataaa	gcaaagctaa	cctacaggag	2460
ccaccttcca	cagtaccac	aggaaaccaa	gacagcaagt	gggacaccag	cctccagggc	2520
actgcgcag	ccgtgcgcct	gtgtctgcca	ctgccctgg	ccgtcactgc	caccagccgg	2580
caagacaccc	acagaggaga	gctctaagcc	acaactgtgt	acgaagacaa	ctgtgcagga	2640
ttttattact	acaacatttt	tgttttcttt	tttttttttt	tttgagactg	agtctcgctc	2700
tgtcacccag	gctggagtgc	agtggcacia	tctcggtcca	ctgtaacctc	catctccctg	2760
gttcaagcaa	ttctcctgct	gcagcctccc	aactggatta	caggcgcccc	ccaccacgcc	2820
tggctaattt	ttgtactttt	agtagagatg	gggtttcacc	atggttgcca	gactggcttc	2880
aaattcctga	caagtgate	accaccctg	gcctcccaaa	gtgctgggat	tacagggtgt	2940
agccactgcg	cctggcccat	ttttgtttat	caataaaaa	gtacttaaat	ttgaactctc	3000
cacatttcaa	atgggtaact	ccagtgtcct	tgatgtcctt	gcgacatgtt	cgtgagactt	3060
ctcttgggtg	tgagagtcta	gcagtgtggg	ggtctggaca	ggagggggag	ggaagagtgc	3120
agagccgggc	agggtaaaga	gaccccttag	gatgtgaagg	ccgcccctga	tttgtcagac	3180
tgggcaacac	ccactccatc	agatggaccc	tggtatgggc	ggcaagccac	ctaggtgccc	3240
aggcaagaga	cagagggcac	gagctgttcc	ggtgtaataa	aatgcataaa	ataagaatat	3300
ttatactaga	tatagatcat	aaatatgatt	atatatgaat	atcattcatc	attagtttgt	3360
agcaattact	ctttattcca	atattataat	aatccttgcc	taagcataac	ctaggaaaaa	3420
ctaggaaatc	ataacctagg	aaaaactagg	ccatacagag	ataggagctg	aggggacata	3480
gtgagaactg	accagaagac	aagagtgcga	gccttctgtt	atgcctggac	agggccacca	3540
gagggtcctc	tgggtctagcg	gtaacgccag	catctgggaa	gacgcccggt	gccaagtggg	3600
ccgtgggtcta	gcggtagcct	cagtgtcaag	gaaaaacacc	cgctacttag	caaaccagga	3660
aagagagtct	ccctttcccc	gggggagttt	agagaagact	ctactcctcc	acctcttgcg	3720
gagggtctga	catcagtcag	gcccgcgcgc	agttatccgg	aggcctaacc	gtctccctgt	3780
gatgtctgtg	ttcagtggtc	acgctcctag	tccgccttca	tgttccatcc	tgtgcacctg	3840
gctctgcctt	ctagatagca	gcagcaaatt	agtgaagta	ctgaaagtct	ctgataagca	3900
gaaataatgg	cgtaagcgg	ctctctctct	ctctcctctc	tctctgcctc	agctgccagg	3960
aagggaaggg	ccccctggcc	agtgggcacg	tgaccacat	gaccttacct	atcactggac	4020
atggttcaca	ctccttacc	tgcgcctttg	tcttgtatcc	aataaatagc	gcaacctggc	4080
attcgggggc	gctaccagtc	tccgcgtctt	gggtgtagtg	gtccccaggg	cccagctgtc	4140
tttttctttt	atctttgtct	tgtgtcttta	ttctacact	ctctcatctc	cgcatacgag	4200
gataaaaccc	accaacctgt	tggggctggg	ccctacaccc	tggctttgta	gactggagcc	4260
taggcacgac	tcagctgtct	tagtgaattg	cgatcctcca	aaccagcaa	ggcacctgca	4320
ggacatctgg	cccagctctc	tcggtgagcc	agttcacgaa	aaagagactt	ttctgagtga	4380
catgctaattg	ggcaatatga	ggactaaatg	ggatgggtctc	caactcggac	aaaccaacag	4440

taaaagccac	tttgcgggga	aagaaacttt	tccttttttc	ttttttttga	gacaggatct	4500
cacctgtgca	cccaggctgc	agtgcagtg	catgaccttg	gtcactgca	gcctcaacct	4560
ctctcaggct	caagcaatcc	tcccgcctca	acctcccatg	cagctgggac	cataggtgca	4620
tgccaccaca	cccaaataat	ttttatat	ttttagaga	cgaggtttca	ctatgttgct	4680
cgggctgggc	tcaactcctg	ggctcaagca	acctcccatg	ctcagcctcc	caaagtgtct	4740
agattacagg	caggagccac	caggcctggc	caacatagga	agaaatttaa	atgtgaattg	4800
aatattagaa	gagatgaaaa	ttcatcaaca	tggaaagaca	aagatcatta	actaaagcca	4860
aaccagaatg	gaagctgtgt	gtacagtggg	gtctcatgct	gggaacgcga	ggggcacgtg	4920
cagggtctcca	gggtgtggcg	acgccccatg	ctccctttgt	gggggttcat	ccagcggaac	4980
atgaggacct	gggtgtcttt	tcaacatgta	cgtgagttta	ataataaaaa	ggtttaagga	5040
aagaaaaatt	catatgtttc	tatataaaca	gaacatctgg	aaagatctat	tctaaggtgt	5100
tgacagtagg	aatctctagg	tagtagtaat	atggcctttt	tgaatttttg	cttatcagta	5160
ttttctaat	ttctttttct	ttctaaataa	ttctagctat	gaaataat	tctaccatat	5220
atattttgta	ataaaaaatg	ttatatattaa	ttttttaaag	gctgtacaaa	cttcctgata	5280
aaatggcaaa	ttagacacac	acatgtgggc	cgggtacagt	ggctcgcgcc	tgtaatcca	5340
gcactttggg	aggctgaggc	aggcagatca	cctaagggtca	ggagtttgag	accagcctgg	5400
ccaacatggg	gaaaccccg	ctctactaaa	tatacaaaaa	tgagctggat	gtgggtggcac	5460
acacctatag	tgccagctac	ttgggaagct	gaggcaggaa	aattgtctca	acccgggagg	5520
cagaggttgt	agtgagccga	gatcatgcca	ctgactcca	gcctaggcaa	caagagcgag	5580
actccaactc	aaaaaaaaat	aaaaataaca	cacacgtgaa	taggctcctc	atggaagtca	5640
tcacaacaat	gcagagggaa	gagcttccaa	agtgtaaacc	cagaagcgag	gagcaggagg	5700
gtgcgcgag	acgcagagag	cagcaaggtg	cagactgaga	ggcggaggct	ggcgtgggg	5760
agatgactga	tgctcagttt	ataccccaaa	tcctgtaaatc	tagaggcctg	gcacatcaac	5820
tacctctgcc	agcaggaatg	agggaaagga	gggcaaccaa	aagatgtccc	accctcacc	5880
atccagctac	ctgccatcct	cagccccact	ggcagaagac	cctgagaggt	ggaggcaggc	5940
ccctgcctac	aggaccctga	gagctagggg	aaggcggtat	cctgaactgt	gtcccccgta	6000
aaattcatat	gttgaaggcc	tcatccccag	tgtgactgta	tttaaagatg	gggtcttcag	6060
gagataat	aaatgaggtc	atataagttg	gccctcatcc	agtaagactt	tgaccttctg	6120
gtggtttttt	tttttttggg	gactgggtct	cactctatca	ctcagggttg	agtacagtgg	6180
cacgatcacg	gtcacttgct	gtctccaact	cttggtcca	ggtgatcctc	ctgcttcagc	6240
ctcctgagta	gctgggacta	cagggtgctta	ccaccgcacc	cagctgggtg	tgcatttgtg	6300
ttttttaga	gatgggggtt	tgccatgtcg	cccaggctgg	tcctgaactg	ggctcaagtg	6360
atctgtctcc	ctcggcctcc	tgcatgtctg	gaattacagg	tatgagccac	cgcgcttggt	6420
cgaccgtgac	cttctaagaa	gtgaaagaga	aagatctttc	tctctccctc	cctctccatc	6480
atgaggacac	agcaagaagt	cggccatctg	caaggtagaa	agcgagtcct	cccaacagct	6540
gaacctggca	gacctgatc	ttggacttca	gccttcagag	ctgtaagaaa	ataactctct	6600
gctgttcagg	ccacgcgggt	tacggcagcc	cgagcagact	aagacacacg	ccatctgggg	6660
agtcagacca	gatcaggaag	aaaggcctag	agctcaggat	actgaaggtc	ccaaccgggt	6720
gctggaccag	accaccccg	cagccgcggc	cacggagtca	cggctcgggt	gagggtgacct	6780
ggacaccatc	ccggcagccg	cggccacgga	gtcacggctc	gggtgagggtg	acctggacac	6840
catcccggca	gccgcggcca	cgggtgtcacg	gctcggatga	gatgactcgg	acaccacccc	6900
ggcagcccg	gccacgggtg	cagggtctcag	gtgaggagag	ttggatatgg	gactgggcct	6960
accccgaggc	tgcttccacc	cagacgcctg	gggtgggtgac	acgaaagctg	ggctcagttg	7020
ggatcagagc	agcctctccc	caggctcagaa	atgaccctgg	gctcctcaca	gtagccctag	7080
ggcaccatga	gaaagctacg	tggaacttctc	tgaccaaggg	tcactgtctc	cacactactc	7140
attgcaggcc	atgtcagggc	tcagctgagg	agacgtggac	accaccccag	cagccgcggc	7200
cacggcgctc	caagggaggg	acttggggcac	tgctctctg	ggcaagagtg	gggaggtgtg	7260
gggtgggaga	tgtctggaaa	catcatggac	acatgccggg	aaaacacgga	agctgtgcac	7320
caagggtgctg	acaaaggaaa	aaggagaatg	gagggtgtgaa	catccagcta	gcagggtccca	7380
ctcagaaact	cctgcatttc	cagacatggc	caccagctct	gtggatgaga	caggggagga	7440
cagggtacct	cacaccagga	accacacacg	gtccatgtct	tgctctgtga	tcacacaaca	7500
gcctccacca	ccctgacatg	caggagggag	gtcaaagcct	cgggtccaac	aacaggctcc	7560
acagcaaggg	aagaaaggca	ggaagggaact	cagggccagg	tcctcccagg	cagcagctgc	7620
ctgcacgctg	tccaccaagg	gaggtctgac	ctacaccgca	caggggttgg	cagtctagag	7680
tcgtcctctg	tcaaacgggtg	agaaagtcaa	aagctcatgc	tcagtgatat	gctaggtcag	7740
catgaagatg	ccacacatga	gacacagcaa	ggatgagacc	aacgggaaga	ctgccccaga	7800
ccagagcccc	agagccctct	ggggaggaag	aataaggatg	gcagcctggg	actgcccggg	7860
gctgactctg	cctttatttc	acccagcag	agccagaggt	gacaccggct	cacagcagga	7920
gcagctctgc	cacctctagc	agtttccacc	tacgggcagc	aaaacaaagc	tggcagtttg	7980
ggcaaatgtt	agcgtttttg	ccaactaaca	tttgaatcgg	acatctggta	cagagatgag	8040
gaagaaaaca	ctcacagttt	catgaagact	gtcaagaaaa	tcactgactc	ttcacttcat	8100

ttatgaaagg	ccagctctct	gacatcccta	ccactccctc	tcacatgaga	aatcacggcc	8160
tttcaggacg	tggagccacg	tggccatgca	ggtacgggag	gcctccccgc	agctgcagct	8220
gggtcttctg	gtccccgtgc	catttctgct	tttcttcgct	ctctacttac	acacacattt	8280
gagtcacagtc	tcagaagaac	tggaaactaga	aaaatcctga	cacttgtccc	ttactacggt	8340
aatgccagct	gtgccaaagg	cagcccaacc	caagccccc	tcagcccca	tggcaccgag	8400
gccccagctt	acccgtgagg	ggccaagttg	gtcgtcacca	acacggtctt	cacccctctc	8460
acaccactgc	cgctccactgc	agtgtccgga	gttgtcacia	ccaccacctc	ctccatgtgc	8520
acactcacgt	cgggagtcgc	catggctcag	cggaaggagg	cgcccaggcc	agcagcgta	8580
gtcctccagg	gtcccaagtc	ctggagggaag	caaggcagg	cacagggatg	gagtcattct	8640
cacatccaca	caacatagca	ctcacaaagg	catctcta	cagctccaaa	gacccacct	8700
tgagtcccag	actgtacct	cctgacaaaa	acgagcggca	acagaagggc	tactccaggc	8760
tctggtccg	agggcggtgt	aagcgcactc	caccggtttt	tcccactgga	taagccgaaa	8820
cccttggtga	gaaagcacag	agccactccc	tccacgtggg	gctcagagca	ggaggacagg	8880
aggggccttg	aattccaagc	aacttccctg	gacgcaggct	cccggcttgc	cagttcttcc	8940
gtctctcctg	gcctgaactc	aaagccagcc	ccaatccctg	aactgagttt	cagggtgcaga	9000
aagcactcca	agaagtcctc	gctgtgtctg	ggaacgggaa	gggaaaccca	ttcaagacag	9060
aaagagagga	gggaaacgcc	ctgggttttt	ttgggttttt	gggttttttt	tgagacggag	9120
tctcgctctg	tcgcccaggc	tggaaatgcag	tggcacgacc	tcggctcact	gcaagctcca	9180
cctcctgggt	tcaagtgaat	ctcctgcctc	agcctctcca	attgctggga	ttacaggttt	9240
caccatgttg	cccaggctgg	tctcaaaactc	ctgacctcag	gtgatccact	cacctcgccc	9300
tcccaaagtg	ctgggattgc	aggtgtgagg	caccatgcct	ggcctgcccc	gggttttaaa	9360
attattatta	ttttgtcttt	cctggctttg	ccttcagcaa	gtccaacccc	tgctaaaacc	9420
cggtgataat	ggctgtcctg	gcccataaag	cttggagaca	ggggaatctt	cctcctgact	9480
aaaggaaatg	tggcccaaga	gtgtgggggc	tccctgttgc	cctctcactc	tccatccccc	9540
acctagcaca	gggaacacaa	aagcccttgg	tttcagcca	gagggaacag	agcctggagt	9600
cagagtgtgg	gggaggcgac	aagaggagag	gggagaagag	aggatggcac	acagctgtgt	9660
gtgagcgctt	gggtcgtccc	aagacagtct	ctacgtggtc	ctgaccttaa	agggcaagg	9720
gaagaaaact	gacctacagg	ataggccact	gcccaggctt	cagatggggc	ccagtggcgc	9780
atatgggaca	gtccacagtc	gcactggaaa	gtctctaaaa	taaactggcc	taagaacaca	9840
gacacaggaa	cggggtgcaa	aatttgcagc	ctgaacctaa	ccaggctgat	ttcttgctat	9900
gaaaaaaaaa	agctctacatt	ctctgtgaaa	cttaaaacaa	gacctagagt	ccatagcaca	9960
gtagtcaaag	catccagaac	acgatcaaac	ttcctggcaa	agggtagtct	ggttgattct	10020
caaaggaaca	aatacacaag	agaagctggc	tcttgaacgc	agaatccaga	gacttttcagg	10080
tgctatcgga	ccagctccaa	gaggaaagca	aacattgtca	accaagtggg	aagaaaatct	10140
tggatatagaa	acaggagtta	taaccaaaca	gaaatgtgaa	aattaaaaac	gacaacccaa	10200
agaaaataca	caaagctggg	atagtctcag	ctactcggaa	ggcggggctg	gaggatcggt	10260
tgagcctagg	agattgaggc	tgcaatgagc	tgtgatcaca	ccaccgcact	ccagtcctggg	10320
caacagagtg	agaactctct	caaaaaacga	aaaagaaaga	aagtagaaca	gaagtgaaca	10380
ggggctgggg	gagggagtac	agggagttgt	tctttaatga	gtacagaatt	tctgtttggg	10440
atgatgaaaa	gctctggaaa	tggacggcgg	tgatggctgc	acaatcactg	tggctgttct	10500
gaatggtgct	gaaccacaca	tttaaaaaaca	gttaaaatgg	gctgggcgtg	gtggctcacg	10560
cctgtaatcc	cagcactttg	ggaggcggat	cgcttgaggt	caggagtctg	agaccatcct	10620
ggccaacaca	gtgaaatcct	gtcttgacta	aaaataactaa	aaattagcca	ggcatggtgg	10680
caggcacctg	tagtcccagc	tacttgggag	gctggggcag	gagacctgct	tgaacccagg	10740
aggcagaggt	tgcatgtgagc	cgagatcggt	ccactgcact	ccagcctggg	caacaagagc	10800
gaaactccat	ctcaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aagttaaaaa	tggttaaatt	10860
ttatgttatg	tatattttac	cgtaataaaa	acactgtaat	gctactataa	tagaatgact	10920
cattaggatt	agatatagac	tagaaagtac	agaatataaa	aactttttta	acaaagaaaa	10980
attttcatgg	ccaggcatgg	tgtcacacct	gtaatcccag	gactttggga	ggccaaggca	11040
agaggaatgc	ttgagctcag	gggtttgaga	ccagcctggg	caacacagca	acacccatc	11100
tctgctaaat	aaataataaa	aaatagccag	gcatgggtgt	gtgcacgcct	gtagttgcag	11160
ctactctgga	ggctgaggca	ggaggatcac	ttaagcccag	gaggccaagg	ctgcagttag	11220
ccatgggtgt	gccactgcgc	tccagcctgg	gcaacagatc	aagaccttgt	cacaaaaaaa	11280
agaaagaaag	aaaagaaaaa	agaaagaaaa	taaaatcttc	cagaactttt	aaaatcatca	11340
ttgttaatat	aaaaataaca	tcacctgccc	ctaggactgt	aacaaacaag	tgtgtctaag	11400
gacaggagtg	ggtccacccc	aacctggcac	gcagtgggtc	cctgcccaga	gtctggccct	11460
gcactcacta	agaggaggca	ctcatagccc	agccaggcct	ctgcaattat	gccttcaatg	11520
ccagaactaa	ctcaccacaa	ctgaacaatc	gatacaciaa	tgtgccttca	ggtctcaagg	11580
ttcttgctaa	atcttactca	accgacattt	tccagcatgg	gaacattttt	ctgaatgtct	11640
tagggagagg	aagtcgcgaa	gagaacaaaa	ggctctcagg	ccaccctagc	ttcttttctt	11700
ccattccaca	ggctgtcttt	tgtctgggta	tgcactggac	cagggggctc	tacttcttcc	11760



tacctgggca	tgggtctcca	cacaactcca	aggtaaagg	ccacaggcaa	gataaagg	11820
agaaaagaaa	gctacgattt	cctgggccac	caatcgcaaa	tggcagccag	tctctgaagt	11880
aacccttgac	cagagatcca	aggaaccaag	aaatgtaggt	gatctgaaca	gaggggatgg	11940
tgggttaaca	ccatgaagga	aagaccatt	ctcaaagaaa	aggaagcaaa	aagaaaccgt	12000
ggggagctgg	gtaccacccg	cagcaaagac	cccgacgcg	ttactgacgc	cagcctggcc	12060
tgggagagca	gtgagtgtgg	cggacggtga	gtggcgggga	gggctgtgg	agggttaggg	12120
taagaagggg	cagcgcccag	agcccagaga	acaccagtga	gggctccaca	ggaacactac	12180
tcaaagtatt	cacggaacac	atctaaacac	aagcactaag	gactaagtgc	gagggacaag	12240
aaaatattcc	ccgtttcctg	tttcaggagg	gtatcgaaaa	tgagtgatgg	aaggaaaaatg	12300
tattgtttaa	atgaggaaaa	aaaattttta	caaattaaaga	acatcctgga	acatgatgag	12360
ccgtttactg	tactcaatt	taaatggtgg	ccatctagga	cagagcgctt	aaggggaaag	12420
ggggctcaca	ggtgaacccc	tccagctgct	ggtgggcaat	ttcccattag	ggcatcaggg	12480
tctctgaaga	ctgtcttcag	atgcttttta	gccaggaaa	ttacaatgat	gaattcgttt	12540
acactggcgg	aattacttcg	tattttctcaa	atataatgtt	ttcactagca	taactttgtt	12600
gtttagact	taggcttcaa	aataaagaac	tttaaacaaa	catgaataaa	aagccacttt	12660
aggccgggg	cgggtggtca	cacttgtaat	cccagcactt	tgggaggccg	cggcggtgg	12720
atcataaggt	cagaagtcca	aagaccagcc	tgatcaatac	ggtgaaaccc	cgtctctact	12780
aaaaatacaa	aaattagccg	ggcgcggtgg	caggtgcttg	taatctcagc	tacttgggag	12840
gctgaggcag	gagaatcgct	tgaacctggg	cagcagaggt	tgacgtgagc	caagatcatg	12900
ccactgcact	caagcctggg	tgacagagtg	agactctctc	ttaaaaaaa	aaagccactt	12960
taaaatttta	ctcaggccag	gtgtgggtgg	tcacgcccac	aatcctagca	ctttgggagg	13020
ccgaggcgag	cagatcacct	gaggtcagga	gttagaccag	cctggccaac	atggtaaaa	13080
cttgtctcta	ctgaaaacac	aaaaattagc	tgggcgtgg	ggtgtgccc	tgtaatccca	13140
gctactcagg	aggctgaagt	gagagaactg	cttgaaccgg	ggaggcagag	gctgcagtgt	13200
gccaagactg	caccactaca	cttcagcctg	ggcgacagag	caagaccctg	tctcagaaaa	13260
aaaaaaaaatt	caaaaatttg	gccaggcgtg	gtggctcacg	cctgtaatcc	catcactttg	13320
gaaggccgag	gcggtgtgat	cacctgaggt	caggaattca	agaccagcct	ggccaccatg	13380
atgaaaccct	gtctctacta	aaaatacaaa	aaaaaaaaaa	caaattggcc	gggcatgggt	13440
gcggtgtgct	gtaatcccac	ctacttggga	ggctgaggca	ggagaatctc	tcgaactccg	13500
gaggcagagg	ttcagcgag	ccaagattgt	gccactgcac	tccagcctag	acaacagagc	13560
gagactctgt	ctcaaaaaaa	aaaaaattaa	aattaaaaaa	taaaaatttc	atttaaaata	13620
ctactgatct	cccgtgctga	cttctcggtg	tttaactctc	actgaggaga	cgctgctttc	13680
ataagggtaa	gctcagcagg	ggcaactaaa	gtcattttaag	cagagagctg	caaagaggca	13740
acagcctcac	tgcaggcagg	ggtcctcgtc	acagcttcag	ggctttgcag	aggattacgc	13800
aatgtacacg	cacaaaactg	aattccagcc	tctccattgg	caactgcata	catacatata	13860
ttcttttttt	gagacggagt	ctcgctctgt	agcccagggt	ggactgcagt	ggcccgatct	13920
cggctcaatg	caagctctgc	ctccgggtt	caagcgattc	tcttgccctca	gcctcctgag	13980
tagctgggat	tacaggcgcc	caccaccacg	ccgggcta	ttttgtattt	ttagtagaga	14040
cggggtttca	ccatgttggc	caggacagtc	tcgatctcct	gacctcgtga	tccgcccggc	14100
tctgctccc	aaagtgtgtg	gattacaggg	gtgagccact	gagcctggcc	tccaatggca	14160
actatattaa	aggttcaaa	caatatgcac	aaaagttacc	tcacagaaaa	tagtgcaagt	14220
ccttgataca	atgctcttta	gacacagaag	aagcactata	gaatagagca	cctcgcccta	14280
ttgccttccc	aagggcgagc	acccctcct	ctctccacag	ctccttcttt	gtttttttga	14340
gatggagtct	cgctctgtca	cccaggctgg	agtgcaatgg	caaaatcttg	gctcactgca	14400
acctccgcct	cccgggttga	agtgtattct	ctgcctcagc	ctcccagta	gctgggacta	14460
caggcaccca	acacgcctag	ctaatttttg	cattttttgt	agagacgggg	tttcatcatg	14520
ttggccaggc	tgggtctgaa	ctcctgacct	ccagtgatcc	tcccaccttg	acctcccata	14580
gtgctgggat	tataggtgtg	agccactaca	cctggcctct	ccacagcccc	ttctgtgttg	14640
aagccaagac	ccaccagctt	ttgatcccaa	ggcttgggtt	ccccactagt	gtgaagttag	14700
tttccaaatt	attaggtaaa	tcagatatga	gaaaatattt	tattttactt	tttttttttt	14760
gagacgcaat	cttgctccgt	caccaggctt	ggagtgaat	ggcaccatct	ccactcactg	14820
caacctctgc	cttctgggtt	caagcaattc	tcctgcctca	gcctcccaac	tagctgggat	14880
tacaagtgca	caccaccacg	cccggttaac	ttttgtattt	ttagtagaga	cagggtttca	14940
ccgtgttagc	caggctgtct	tcaaactcct	gacctcatga	tccgcccacg	tcgggtctcc	15000
aaagtgggtg	gattacaggt	gtgagccatc	acacctggcc	caagaaaaata	tttttaaaact	15060
agtattcttg	accggcacgg	tcaacactga	tgtaattgaa	actgttgat	ttgaagtgtt	15120
agcaaaagaa	gagaattctg	gttcaacaga	aaagtcatgc	acgacttttc	agtcacgcac	15180
gaattacaca	gtaacaaaat	agataacatg	ccatctagta	cgacggggccc	acaacaaaatc	15240
agctccgacc	aacagggtcc	acaccacat	gggtctacac	agatccaggt	cccgcctgtg	15300
agcctacagt	gacgcgggcc	cctgtgggtt	gggtccctgca	ggtcaggtcc	ctgagagtgg	15360
gtcccagtg	ggtgatccct	gcggtgcg	tcctgcgag	ttgggtgcct	gccgggtggc	15420

ccctgcgggg	cgggtgcctg	cgggggtggtc	cctatgggtc	gcgtccctgc	gggtcgggtg	15480
cctgcgggg	ggccctggg	aatcgcggtc	ctgcggtcg	ggtgcctgcg	gggtggcccc	15540
tggggatcgc	gtccctgcgg	gtcggtggtc	tgcgggtgg	cccttgggga	tcggtccct	15600
gcggtcggtg	tgcttgcggg	gtggtccttg	tgggtcggt	cccttggggg	tgggtccctg	15660
gggtcggtg	ccttggggg	ggccctgcg	ggtcggtg	tggccctgc	gggtcgggtg	15720
ccgtcgggg	ggtccctgtg	ggtcggtc	ctgcggtcg	ggtgcctgcg	gggtggtccc	15780
tgcgggtcgc	acccctgcgg	cgtggtcccc	cgggatggg	tccaccgagg	aggccgctgg	15840
aggccgagcc	cgcgcgcgc	cgcggcgcca	agatggaggc	aggaagcgcc	gccgcccgcg	15900
cccgccacgc	cccgccgcg	ccgcctgacg	cgcgcgttgc	gcctgacgcc	gccgcccgcg	15960
cggccgcccc	tcccccgcc	ctccctccc	cccgcgtaa	cgtcctgacg	ctccgcaggg	16020
acccctgact	ggacggcgcc	gcgtgagcgg	agcgagaggc	ctcgccgcgg	gggggcccgc	16080
ggctcgccgg	cgcgccttac	ctggggccgc	gccgggcctg	cttaggcacc	cggcgggggc	16140
ggcgccgtcg	ggagctgcgg	cggcgggcg	cggcgggcg	ggccgcgggc	ttcgctcctt	16200
ggtggggatt	cggcgggcg	ggcgggcg	gcgcgcgctt	cctagtgcg	caggcgcg	16260
ggccgcgcac	gcacggggct	gggagggccg	gacacttatt	tggcgctcgc	ggaggaggaa	16320
ggcgggggcg	tgaataaagg	cccgacgggc	cccgggcg	gtgcgcggac	cgacactgtc	16380
agctccctaac	cccgaggtt	cctcctggtc	cccgaggccc	ccggtcgggc	ggtgcctgcc	16440
ccgcgcgggc	ggcgggggcg	agggacgatg	gtcagtgagc	ggacggcgcc	agggagcagt	16500
gcccacgcgc	ggcagggcg	taccttcagg	cctccaggta	cggcgcgctc	tcgcccggac	16560
gctgctgtgt	gtgaatgggc	gcgaggggac	tcccctgcgg	ggcggaacgc	tgaacacgag	16620
gctgtggagg	aggacgctgt	aggggtgcgc	gactcacgcg	gaacatgcca	gaggctcagc	16680
cagccacggc	gctcccagcg	tggagggcga	ggggcatccg	ggagcgcccg	ggagggctcg	16740
gtcacccttc	aagctgtcac	cccagtccca	caaccagcac	cccagtccta	tcgcagtcct	16800
acagccgaca	ccccgatccc	acccctgccc	aacagccggc	acccacccca	atcccatagc	16860
taacaccccg	gtcccaccgc	tgteccacgg	ccggcacccc	gatccacccc	cagtcccgcg	16920
gctggcaccc	cgatcccacc	ccagcccaac	agctgggacc	caccccgatc	ccaccgctgt	16980
cccacagccg	gcaccccgat	cccacccag	tcccgagcc	ggcaccccca	tcccacagcc	17040
ggcactcacc	ccgatcgcat	agcatagctg	ataccccgat	cccacccag	tcccatagcc	17100
agcaccccca	tcccacccca	gtcccatagc	cagcacctcg	atcccataga	tgacaccccg	17160
atcacgcccc	agtcctatag	cccgcacccc	gatccacccc	gagtcccgca	gccggcaccc	17220
catcccaccc	atgtcccaca	gtcggcaccc	cgatcccact	cggatccggc	agccagcttg	17280
gatcctgttg	ccctcctcca	gccccaggg	ctcatttata	tgttttattg	gcagaggctg	17340
gggctggctc	tggtggcctc	tggtgctggg	ttcttctct	gcaccgcagg	actggctctc	17400
ctgacctctc	caggtgtcat	cgaacaccct	tggtgcttgc	gtcacccgct	gcctgtctgc	17460
aggatcccg	attccgtatc	aggggaccga	aattagtcgg	aaaataggaa	gcagggtgctc	17520
gcttggtatg	aaccttgacc	ctgtgctcac	acttgtagga	ggagggtctc	gcagggccgc	17580
tcccggaacg	ggaggttccc	aagccactgc	acttcggagg	ggctgtaatt	agagttgcac	17640
attcattcag	ttcccagtaa	agtagaacgt	gtccagcca	gtgaggaaaa	ggtgttttta	17700
aaaattagat	tggccgagtg	cgggtggctca	tgctttttac	ctcaacactt	tgggagacaa	17760
aggtgggagg	atcacctgtg	gccaggagtt	caagaccagc	ctgggcaaca	gagcctgtct	17820
ctggggaaga	ataaaaaaaa	aaattgagcc	tttgtcagtg	ctactatttt	attatctggt	17880
aaatatgaga	gggttcacgc	ggtctatgtg	tgctatttat	ctgagtttgc	ctatcgtcac	17940
gttttggaag	taaatgtcaa	taaagtgcga	gaggagtgct	gagggggggc	tggggatggg	18000
aggggtggct	catcatgcct	gtgtgttgcg	caagccacc	gaggtcggcc	tgggggtgagc	18060
cctgggggct	gttctgcctc	cttcaacttg	gggtcccaag	agacaaaactg	ggcaacaaga	18120
gagaaaactc	atctaaaaaa	aaagaaaaat	cacctccaag	ataacttagc	tttcttctgc	18180
tggcataaca	aattatctca	aacttagtcg	cttaaaaaatg	caaatttagg	ctgagtgccg	18240
aggctcacgc	ccataatcct	agcactttgg	gaggccaagg	caggattgct	tgaggccagg	18300
agttcgagac	caacatggcc	agaactgtct	cttttttaaa	aatgcaaatg	tgtccggcac	18360
ggtggctcac	gcctataatc	ccagcacttt	gtgaggccaa	ggcgggcaga	tcacgaggtc	18420
aggagataga	gaccatcctg	gtaaacactg	tgaaccccc	tctctactaa	aaatacaaaa	18480
aattagcctg	gcgtgggtgg	aggcgctgtg	agtcccgact	actcgggagg	ctgaggcagg	18540
agaatggcgt	gaaccagga	agcggagctt	gcagtgagcc	gagatggcgc	cactgcactc	18600
cagcctaggg	aacagagcaa	gactccgtct	caaaaaataa	ataaataaaa	ctgcaaatgt	18660
attctctaac	tggtctgtag	gtcggaaagc	cagcccagcc	tactccgccc	aaaatcaggg	18720
tgctctcagg	gccgattgct	tttgagctc	caggggagaa	gctgttctgg	cctttccagt	18780
ttctggaagc	acttgagccc	cttgtctcgt	ggcctatccc	acacctgaaa	gccagccaaa	18840
tccagttgag	tcctcaccct	ggtggccccc	acactgatct	cctgcctccc	tcactctgctg	18900
tcaaggcccc	ttgtgatgac	atggggccac	cagctggccc	agggcacctc	ctgtcagagt	18960
ccgcgcacca	gtgaccttca	ttccatctgt	cgctgtaatt	cccccttgct	tggaaaccaac	19020
gttcacagat	cccagggggt	aggatgtgaa	tatcttgggc	agggctgtgg	gggggctatt	19080

cttccttcta	aaatatattat	cattttttgtt	ttggggattt	ttttggtttg	gttttttttg	19140
agacagagtc	tcgctctgtc	gcccaggttg	gagtgcattg	gtgcaatctc	agctcactgc	19200
aacctctgcc	tccgggcaga	cgtgagccac	tgcaccaggc	ctgtttttgt	ttttgtttgt	19260
tttgttttgt	ttttgagatg	gagtcctcggc	cgggcgcggg	ggctcacgcc	tgtaatccca	19320
gcactttggg	aggccgaggc	gggcggatca	cgaggtcagg	agatcgagac	catcctggct	19380
aacacggtga	aaccgcgtct	ctactaaaaa	tacaaaaaat	tagccggggc	tggtagcggg	19440
cgcctgtagt	cccagctact	cgggaggtcg	aggcaggaga	atggcgtgaa	cccgggaggg	19500
ggagcttgca	gtgagccgag	atcgcgccac	tgcactccag	cctgggacac	agagcgagac	19560
tccgtctcaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaagag	atggagtctc	actttgtcac	19620
ccaggctgga	gtgtagtggc	gggattatag	gtacgcgcc	tcatgcccag	ttactttttg	19680
tatttttagt	agagacaggg	ttttaccatg	ttggtcagac	tggtctcaaa	ctcctgatct	19740
caggtaatcc	accgcctca	gcctcccaaa	gtgctgggat	tacagacgtg	agccaccgtg	19800
tctggccata	tttattaact	acaaagggaa	agatgataat	tttttttttt	gagatggagt	19860
ctcactctgt	caccagggct	ggagtacaat	agcgtgatct	tggtcactg	aaacctctgc	19920
ctcccagggt	caagcgatcc	tcctgcctca	gcctcccaac	tagctgggat	tacaggcgca	19980
cgctaccaag	cccagctaact	ttttgtattt	ttagttagaaa	cggagtctca	ccatgtttgt	20040
gaggctggtc	tcgaactcct	gaccttgtga	tctgccacc	tcggcctccc	aaagtgtctg	20100
gattataggg	atgagccact	gcaaccggct	gaaagatggg	aatttttaaag	tagagaaact	20160
gggtttggctg	ggcatgggtg	cttatgcctg	taagctcagc	actttggaag	tccaaggcaa	20220
gaggatcgct	tgagtccagg	agtttgagac	cagcctggac	aatatagcaa	gaccccatct	20280
ccgcaaaaagc	taaaaagtta	gccaggtgtg	gcggcacatg	cctgtagtcc	cagctactca	20340
ggaggctgac	gtgggaggat	cacttgagac	caggaggtca	aggctgaagt	gagctgttat	20400
tgtgccactg	cactcagcct	gggcaacaga	cgagaggtct	gtctccaaag	gtaaaaaaag	20460
gtccaggcac	agtggctcac	acctgtaatc	tcagcacttt	gggaggccga	ggcgggcaga	20520
ttcgttgagg	tcaggagtcc	aaaacgagcc	tggtctaaatg	gtgaaacccc	gtctctacta	20580
aaaatacaaaa	aaaattagcc	aggcatgggt	acgggcgcct	gtaactctcag	ctacttgagg	20640
gactgaggca	ggagaatcat	gtaaacccag	gaggctgagg	ttgcagcgag	ccaagatcat	20700
gccactgcac	ttcagcctgg	gcgacagagc	aagactgtct	caaaacaaaa	caaaagaatc	20760
ttgagtcctg	agttcctcta	agggaatttc	caggcacctc	gccacccttg	acaggcaaag	20820
gaacaatctg	atgaggaaga	agatagaaac	agcttaaaac	atagtctccc	ggcggggggc	20880
agtggctcac	ccctgtaatc	tgagcacttt	gggaggccga	ggcgggtgga	tcacaaggtc	20940
aagagatcaa	gaccatcctg	gctaacaatg	tgaaccccgc	tctctactaa	aaatacaaaa	21000
aattagccgg	gcgtgggtgt	gggtgcctgt	agtcaccagc	actcgggagg	ctgaggcagg	21060
agaatggcgt	gaaccagga	ggcggagctt	tcagttagct	gagatcgccg	ctctgcactc	21120
cagcctgggc	gacagagcct	cgagactcca	tctcaaaaaa	aaaaaaaaat	tagctgggtg	21180
tggtggctca	cacctgtaat	cccagctacg	tggcaggctg	aggcaggaga	atcgcttgaa	21240
cctgggaggc	ggaggttgta	gggagctgag	atcgccacc	tgcactccag	cctgggcaac	21300
agagcgagac	tctgtctcaa	aaaaaaaaaa	aaaaaacaaa	aaaacaatag	tctcccaagt	21360
aagttagagt	cacaagggtg	tttgattccc	tgtggaaact	aaaatataac	agcttaacat	21420
atgttcttga	gttatttttc	agaaacttgg	acatccacca	ggtggaaaat	gctgagctag	21480
gaacagtggc	tataatttca	gccttttgag	aggccaaggt	ggaaggatca	cttgaggcca	21540
ggagttagag	accagcctgg	ccaacatggt	gaaaccccg	ctctagttaa	aatacaataa	21600
ttagctgggc	atggtgggtg	aacctgaaat	ccagctact	tgggagacct	agctgggagg	21660
atcgcttgaa	cctggttaga	ggagtgtgca	gtgagctgaa	attgtgccac	tgactcttag	21720
cctggggcaac	agagttagac	tctgtctcaa	aaaataaata	aataaaaaag	gaaaaaagtg	21780
ttgcctgcag	gcccgggcaca	gtggctcacg	cctgtaatcc	caacactttg	ggaggccgag	21840
atgggcagat	cacctgaggt	caggagtgc	agaacagcct	ggccaacatg	gtgaaacccc	21900
atctctacta	aaaatacaaaa	agttagctgg	gtgtgtacat	gtagtctcag	ctacttgagg	21960
agctgaggca	ggagaatctc	ttcaaccggg	gaggtggagg	ttgcgatgag	ctgagatcac	22020
gccaccacac	tccatccagc	ctgggtgaca	gagttagact	ccatctcaaa	gcaaaaaaag	22080
aaacataggt	gggacccttg	gtgtgtcctt	agggcagatg	ggttgaggta	tactgtctgt	22140
cctgtcatgt	aaaagaaaac	gagccgactc	tgtgtctact	ggagaaagca	ctgcataat	22200
cagccacagt	caatacctcg	cttctgcagg	gacgggtggc	gccagagtgg	gaggcttttg	22260
tagcaccat	gtcgtggaat	cacaatgttg	tcgatagctc	tggggtcttg	tacaaaaatg	22320
cagatcctcc	catttggttt	ccttatggga	aggatcgag	tactataata	catgggcttg	22380
tgcaagggat	cattataccc	ttttctcttt	ttttgctttt	ctttgagaca	gagtttcaat	22440
ctcgtcaccc	aggttgagg	gcaatggcgc	gatcttggct	cactgcaacc	tcacctcct	22500
gggttcaagt	gattttcctg	gtcagcctt	ctagttagct	gggattacac	atgcccgcca	22560
ccaggcctga	cttatttttg	tatttttagt	agagacaggg	tttcaccaag	ttggtcaggc	22620
tggtcttgaa	ctcctgacct	cagggtgatcc	acccacctcg	gcctcccaaa	gtgttgggat	22680
ttcaggcata	agccaccagg	cccagccttt	ctttcttttt	aaaattaatc	tttgtttaa	22740

aatactctca	ttttttat	aattgtagca	ctcctagatc	ccgaaagcag	atacactctt	22800
gttatgggtc	tgattctttt	cattgtctca	cgccttagag	gatattgtcc	aatactggat	22860
aaaagtttac	tcaggtctac	ttccacttta	acggggatgg	ctgaatatct	cttccacttg	22920
gctgtttgtt	tataatgaac	tgacaaacat	acaaattttc	ttgagttctg	tgagacattc	22980
tagtaaatca	tctaacctga	agagcaggtt	gtgagaaccc	ctgatttaga	aagcccagtg	23040
gtcataaata	taagtggctc	tggactggct	cccggggctc	gaagtgtggg	cagtcgggta	23100
ggattgagcc	cttghtaatt	gtaggatctg	acacacactc	caggaaggca	gtgtcagaat	23160
ttacctgtat	tatattggac	acccagttag	cgttttgaga	attggttgct	ggatatagaa	23220
aataccaaat	attttatgtc	aggggagtga	aagaaaaaac	aaaaaccg	ccgggcgcg	23280
tggctcacgc	ctgtcatccc	agcacttttg	gaggccgaga	cgggcgatc	acgaggtcag	23340
gagatcgaga	ccatcctggc	taacacgggtg	aaaccccatc	tctactaaaa	atacaaaaaat	23400
tagccggg	tggtggcg	cgctgtagt	cccagctact	cgggaggctg	aggcaggaga	23460
atggcgta	cccgggaggc	ggagcttgca	gtgagcccag	atcgcgccac	cgcactccag	23520
cctgggcgac	agagcgagac	tccgtctcaa	aaaaaaaaaa	aaaaaaaaaa	aaacaaaaaa	23580
aaaaaccca	tacacttta	gaaagcaac	tgacagcatt	tgttaccagt	gataaaattt	23640
gagctttgaa	gtaagaataa	caattttgcc	attgtgccc	ggccaagaaa	aaaaaaagaa	23700
ttttgccatt	gtgaaaggct	tcccagtagt	ttctgatgag	cttgacgggtg	atattaacaa	23760
ataacttttt	ttttttttt	ttgagatggg	gtcttgctct	gtcaccagg	ctggagtgc	23820
gtggttcaat	ctcagctcac	tgcaacctcc	gcctcccagg	ttcaagcgat	tctcctgcct	23880
caacgtccca	agtcgctgga	ctacaggtgt	gcgccaccac	gtccagataa	tttttgtatt	23940
tttagtagag	atggggtttc	accatgttgc	ccagactggg	ctcaaaactcg	tgacctcagg	24000
cgaccgcgcc	acctcgccct	cccaaagggtg	ggaggccctg	ctgggattag	aggtatgagc	24060
cgctgcacct	ggcctcttgt	ccttggtgtt	tgcatgtatg	caatgacct	gtcttacct	24120
tgcaaccaga	aaaaaaagggt	agtgtacaa	tgtttatcct	gtttttccca	gagtagacat	24180
tatgaagatt	aaaaaaattt	gaaagtgtt	tgaatataat	aaactatgct	atacacacaa	24240
cattttggtg	actagaaata	caagtttatt	gtttgttgtt	tgttgagaca	gggccctgct	24300
ctgtctccca	ggctgggtgg	cacaatcatg	gtcactaca	gtcttgaact	cctgggctta	24360
agcgatcctc	ccacctcagc	ctccagagta	gctgggactg	caaacgagca	ccaccacg	24420
tggctaatat	ttgtattttt	tgtagagatg	gggtttcacc	atgttgcccc	gactggtctc	24480
aaactcctgg	gctcaagcaa	tgctcctgcc	tcggcctccc	aaagtgtctg	gatcacaagt	24540
atgagccact	gcaccggct	gagttcttgt	tgttttaagc	cgcttcattt	gtggtacttc	24600
ttacagcagt	cccaggaaac	tgagcaactg	cagaacatca	aaattgtttt	tcttcagcaa	24660
aaggagaagc	acttgtgtgt	ggcaccagct	ttcctgtg	tcacttctgc	atggccgcac	24720
ctttgcccga	cacgagtga	cagcaggctg	tgggggagca	actggttgag	tcaggcctcc	24780
acttgtgccc	tatccccacc	tgctttgctg	gacacccctg	tttggggggc	accactgct	24840
gccccagaca	ccaagcaagc	accagctgtg	tccaaaactt	acagtcactg	tcttggcccg	24900
ttttgtgctg	ctgtaacaga	atgccacaga	ctgggttaatt	taatacagaa	cagaaattta	24960
tttccctcaaa	gttttgagg	ctgggaagtc	caagagcaag	gggccatcag	gtcagggcct	25020
ggctctctgct	tccacgatgg	caccttgacc	accgtgtcct	cacgtgtgca	gagagagccc	25080
actcccagga	gcccctttta	tagagcagaa	cactgtctgc	ctgcggttaa	gtttccaaca	25140
cgatgaacttc	ggaggtgaca	cattcagatc	atagcagtc	ctctaggcag	agtgtctgat	25200
gtggttttaa	aatacgttca	cagactggcc	gggcactgta	gtcacgtct	gtaatcccaa	25260
cagtttgagg	ggccaagggtg	ggtggatcac	ctgaggtcag	gagttcaaga	ccagcctcac	25320
caacatgggtg	aaaccccatc	tctactaaaa	atacaaaatt	agccagggtg	tgatgcctg	25380
taatcccagc	tactcgggag	gcccaggctg	gagaatcgct	tgaatccagg	aggtggaggt	25440
tacagtga	cgagatcatg	ccattgcact	ccagcctggg	caacaagagc	gaaactctgt	25500
ctcaaaaaat	aaaataaaat	aaaatacatt	cacaaggccg	ggcactgtgg	ctcacgcctg	25560
taatcccagc	tacttgggag	actgaggcag	gagaatcgct	tataacctgg	gaggtggagg	25620
ttgcagtga	ctgagatcac	accgctacac	tctagcttgg	gcaacaagag	tgaaactccg	25680
tctcaaaaaa	gtaaaataag	gccctgcagg	catggtggcc	cacacctgta	atcccagcac	25740
tttaggaggc	caaggcggtc	ggatcacgag	gtcaggagtt	cgagaccagc	ctggccaaca	25800
tgatgaaacc	ccgtctctac	tagcctagcc	aacatgggga	aacctgtct	ctactaaaaa	25860
tacaaaaatt	agccgggcat	ggtggtgcgt	gcctgtaatc	ccagctactc	aggaggtga	25920
ggcaggagaa	tcgcttgaac	ccaggaagca	gaggggtgcag	tgagccaaga	ttgcgcgct	25980
gctctctagc	ctgggcgaca	gagcgagact	ccatctctaa	ataaataaat	aaaaataagaa	26040
aataaaaaat	gttcacaaat	cctttgacat	tcctcacctc	aaaagctgga	acccaactcc	26100
ctcctaagca	tgagtcttct	cagtgaactca	cttctaacag	cagaacttac	atggttcccc	26160
acaccagag	gacattgggt	tcttcccac	ccagcgacct	ccaccaggt	ccaccaggt	26220
cgctggcctt	gggtccccca	gagccatgtt	tcaaggacac	tcaggcagcc	cctggatgtc	26280
catgtggtaa	ggatgaagg	cctcctgcct	gcagcctcg	gagggagcat	tctcagaaga	26340
ggatgcccc	cctcctgccc	agccttcaga	tggccaggac	ctcgtccaac	gtcctgactg	26400

caacatcatg	agagactccg	agccagaaac	ccccagggtt	tgtactcctg	acttatggga	26460
actgacagat	aatgttcgtt	gttaattaag	gggtgacttg	tcacacacaa	taggtcacta	26520
aacagctctg	tctggcctcc	caggaggagc	ctgcctttcc	ttttcttcat	gggaaaagtg	26580
cgatcagttt	gtgaaggaa	gtccgcccc	acttgatgcc	agaggctcca	catggtgact	26640
gtcataaact	ccatctgccc	tcagtgcttt	gccagcacc	ggcctgcgat	cagcttggtc	26700
ttgctgggagg	ccaaggccca	cgtgtgtttg	tgtgtgtgtg	ctgtgtctgc	gtgcccatgc	26760
atgcccaggg	tacagggatg	ccatatacaa	attctttcaa	tgttgatgtg	ggcatgtgtg	26820
tgtctgtatg	cccaggatac	agggatgcta	tatacaaaact	ctgttttttc	gttttttttt	26880
ttttgagaca	gagtcttgct	gtttcgccca	ggccggactg	cagtggcgct	atctcggtc	26940
actgcaagct	ccacctccc	ggttcacgcc	atcctcctgc	ctcagcctcc	tgagtagctg	27000
gaactacagg	cgcccgccac	cacacccggc	taattttttg	tatttttagt	agagacgggg	27060
tttcaccatg	ttagccagga	tggctctgat	ctcctgacct	cgtagatccac	ccgcctcagc	27120
ctcccaaagt	gctgggatta	caggcatgag	ccaccacgcc	tggcctacaa	actctttctt	27180
tttttttttt	ttttttttga	gatggagtct	cactgtcttc	caggctggag	tgcagtgatg	27240
cgatctcagc	tacttgcaag	ctccacctcc	cgggttcacg	ccattctcct	gcctcagcct	27300
cccaagtagc	tgggactaca	ggcacacacc	accacgcccc	gctaattttt	tgtgttttta	27360
gcagagatgg	ggtttcacca	tgttagccag	gatggctctg	atctcctgac	ctcgtgatcc	27420
gcccgcctcg	gcctcccaaa	gtgctgggat	tacaggcgtg	agccactgcg	cccagcctgc	27480
aaactctttc	aatgtctttc	ttttctctct	cctgccatct	tctcccttgc	agattttctt	27540
tgtctctacg	tcttccccag	ctgagtcgga	ggctcctgact	tgccacgcct	ccctggactg	27600
gaggagaggt	gatagcaaga	gctccttcaa	gcccaggaat	gccaccaggg	ctgccccggg	27660
agaggaggaa	gctgggtctc	tcgggggttg	ggggaccaga	caccttcta	agacatggac	27720
tcagcacaga	aagtctagac	atccactaca	aacacatctc	cctcctaaca	gggggccccct	27780
gggcacccca	agtggctggt	tgggtgggaca	ggcatgtcca	tcagtcagaa	tatctttatt	27840
ttttattttt	tattttttat	ttttgagaga	gtttcactgg	agtgcaatgg	cacgatctca	27900
gctccctaca	acctccgcct	cccagggtca	agcgattctc	ctgcctcagc	ctgccacgta	27960
gctgggatta	caggtgtgag	ccaccacacc	cagctaattt	tttttttttt	tttttgagat	28020
ggagtctcga	ggctctgtcg	cccaggctgg	agtgcagagg	cgcatctcta	gctcactgaa	28080
agctccgcct	cctgggttca	cgccattctc	ctgcctcagc	ctcccagagta	gctgggatta	28140
caggcatgag	ccaccgcgcc	cggccaattt	tgtattttta	gtagagacag	ggtttcacca	28200
tgttggtcag	gctggtcttg	aactcctgac	ctcaggtgat	ccacctccct	cggcctccca	28260
aagtgtggg	attacaggcc	tgagccacca	cgcccagccc	agaatgtctt	cttacttttt	28320
attactctgt	ccccatcct	gggtccagac	ctgtgaccgt	gaacaaccgg	ctgcccaggg	28380
gtgaatggg	tgagtggggt	gagtccacag	aacagtggg	tgacgcccc	ggggtctcgt	28440
agcacctgcc	cccaggctcag	gaagtccac	agcctagagg	ctccagcctc	agatgcatac	28500
atatgtaggc	ctgccccttt	cctcctgagc	ggcgggccac	agagtccctga	acaacaggaa	28560
gccccagagg	agggctccgc	cctgaggggag	ggcagggggag	cccccgccag	ccccaccac	28620
agcagcgggc	cctgccaccc	cccaccctga	cacctcacc	cttggtattc	agagaggaaa	28680
gtgggcttgt	gtgtagttaa	catgctcata	tcttaaaatc	accgttgtca	atagaacaat	28740
tcataataat	gatgataaaa	taagatttat	aaccagcttc	agtctggaga	tcacacaga	28800
gcagatcttc	actcccagac	agggagcccc	cagctgcccc	cgacccca	ggtgcaggac	28860
acacacagac	agttcaacca	tgtcttaaac	acacaggtgt	ttatttaatt	gttcatttga	28920
ttgaattttt	aagttcactt	tactacgtgg	atgagatggg	tgcataattac	agtaggcttt	28980
cgctatgagc	gctgccacca	tgaggaatat	cccagccctc	agttctgctt	ccctttctga	29040
gtcccaaaaa	agccagatgt	ggacagcctt	gggttcccat	cccagctggc	tgctccttct	29100
ggggctgtct	tgggtggggag	agggagatgg	ggcagtggtg	ccctgctgac	ccctgagccc	29160
tgacggggtc	aggatcctcc	cgtggtccct	gggtgtggct	ctggaagaca	ctggcagtg	29220
ccggccaagg	cctcccgcag	gatggaagtt	gagggccctg	gctctgggtc	ctaagagaac	29280
tcagccgccc	ccttcacact	ttacagcaag	gggccaggca	gcagctttgg	gatggggctt	29340
ccgtggagaa	gtgggggatg	ctgcagtggt	acaaagacag	cctccccac	cgccatcctc	29400
cagctgaccg	tctccaagg	ccagcactgg	gcgtccaagg	gaaagaagga	actcagccca	29460
gaggggtgtg	gcaggagagg	cctggagtca	ggcctccacc	cacagcccc	tctgggtgcc	29520
aagtgggaag	ggtgttgggg	ctggcttggg	aaccttacc	gctgcccctc	caacacctgg	29580
atctgtgggc	agcgggtcca	caaaaatccc	cttggggctc	cctgaggagg	acttgtggct	29640
gcccgtttca	ccagggcaga	gggcacagga	ggggccagca	ctccaaagg	ctctagggtg	29700
ggtctttcaa	ggacatctgc	aaagccctgg	tggggagggg	cctggggcag	aggctctttg	29760
gaactcttgc	acttctgagt	gggggactgt	ccatgctgcc	cacaacctct	agaccatgca	29820
ggctgtctat	gggtccctgg	cagagaatgc	ccactcccc	gcagactcag	ggcaggcccc	29880
caactgtcag	cttcaggaa	ggcccagggt	gtccacctca	cgccaggtgg	tctcagagga	29940
ccccgtgca	accacattaa	ggaaagctgc	agccccacc	caccgcctg	ccagttcaac	30000
aagcaccggc	tgacacagca	ggctcccagg	caccatcacc	cccctcccc	gtcggccctc	30060

cctcacgggg	agcccccttc	ccctggaaag	acagcaggta	ctgtagcctc	gcctgctggc	30120
cagggggcgcc	ggctcagagg	acctgccctg	acctgcacgt	gctgaccaga	cagcccagcg	30180
taaggaccgg	cgatcccacg	ccaccgcccc	gggtttacca	cggtcacccac	cacctctctc	30240
acagggcccc	cgggggaccc	agccgcgccc	ggcctggtgt	ctgcaccgag	ggaccgcgtc	30300
tcacgccccg	cggctcctgc	aggggaagcc	gtggtcagcg	actcaccacg	aggacagggc	30360
agggcggtcg	agtgcggaag	agaagcatga	agctgggggc	gggggtgggg	gaggaggaac	30420
aaaagtgtca	tctagacaga	ggtgaacgaa	acaaaaccaa	aaccggaacg	tgttccgctc	30480
caggatgggc	gcccggcgtc	ccggggcccc	agcccagacat	ctcttctcgc	tgctccttgt	30540
tcctgcgcac	ctcggccgcg	tgagctcct	gcaggacagg	gggcgggagg	gcctgagggc	30600
gggggtggct	tggggcgact	ccgggaaccc	ccaggcgcg	aggccgtggc	gccctggcac	30660
ccggccggcc	tcctccgggc	tgcccttcgg	caggaccctg	actgagttga	gggggcggga	30720
gcaccgggga	ggcgagagc	aaggccaggg	accaaggacg	ggtttcctgg	gagctggctg	30780
ggccccgctt	ctagctcgtg	ccggagccga	gcttccctca	gggcactttc	aatataatga	30840
atttagccat	ctattactgc	ggctagttac	tgctcccgca	ggaccagact	ctggacctgc	30900
ctcgtgcgct	gctggggagc	cccagtaaac	acgggaggag	ccccgaccc	ccacccagc	30960
tcagcgctc	ggagtccccg	gccccgctct	gcgccccctc	gagctccgcc	ctagccccgc	31020
ccccgcccag	tgccccgccc	cctgcctgct	gctagccctg	ccccgcccc	ggccccctgc	31080
cgctccgagc	tcggccctgg	ccccgccccg	gccccctgcc	gctccgagct	ccgccccggc	31140
ccccgcccc	gcccagtgcc	ccgccccctg	cctgctgcta	gccccgcccc	cgccccggcc	31200
cctgccccgt	ccgagctccg	ccccggcccc	gccccggccc	ctgccccgct	cgagctccgc	31260
cctggccccg	ccccgcacca	gtgccccgcc	ccctgactgc	tgctagccct	gccccgcgcc	31320
cggccccctg	ccgctccgag	ctccgccccg	gccccgcgcc	ggccccctgc	cgctccgagc	31380
tcggccccgg	ccccgccccg	gccccctgcc	gctccgagct	tcgccccggc	ccccgccccg	31440
ccccctgccc	ctccgagctc	cgccccggcc	ccgccccgcg	accttctcgc	gcagccgctc	31500
gcgcagtgcg	gccaggtgtg	cctcgcgcat	ctccttgctg	agctccatct	tgtagttgag	31560
cttctcctcc	gcctggcggc	tgaagtgtgt	attctcctcc	agcgccctgt	gcagcacctc	31620
gcgctcgtgc	tcgcgccgct	ccgccagctg	cttcagcacc	tgcgctcctc	gcgtctgtgc	31680
ggggccggcg	ggcgcgcggt	agcggaaccc	ccggggccctg	ccccggccgga	ctcctccctg	31740
ctctccgcct	cccgcccagc	gcccgcctcg	ctcactggc	gcctccacct	gcccaggcct	31800
gggtggggcg	cgggaccccc	ggggcgctgc	ctgggaaacc	tcgctgcca	tcgggctgt	31860
ggtcggggca	gggcaagggg	gtcgcgatcc	gctgcccccg	ccccgctccc	tgctctcggc	31920
gcgggtcccg	cggctcctgg	tgcgcccagg	gcccccgcca	tacctgccc	ccactgcaca	31980
ccctgccccg	cgcgctctgc	cctccaagga	ccagcagcaa	gaaaccctaa	acttgtgggc	32040
ggtctctgag	ctttgtctct	tcctcggaca	tcgccccact	gagcagagta	gctgcttgtt	32100
acacaccggg	ttcccagctc	ccaattaggt	gcccaggagc	ggaggggtccc	cagggatgct	32160
gggggagggg	ccggctggtg	acccctggga	ggagagcggg	gcagcaggac	ccgcacccac	32220
atgccagctc	ctactagtca	gcccgtgtaa	ccctggctct	tgccctcacc	gggaagggaa	32280
cggagccgct	tcccccgccc	aatgctgtgg	cctccagggt	ggcaccacca	aaaggacatt	32340
tttatctctg	tttcagtctc	agaggggctg	gtgggagggg	aggctgcagg	gaggggacct	32400
ggagcccaca	cccacctctc	ccagggcccc	tcgccccctc	agcaagcctc	agggtcttca	32460
cacatgaggc	ccttccctca	gcttccctgt	ctgggagagg	gatgccccac	ccgagctccc	32520
cagggcccat	ctggggacca	ccccctagca	tcctgctggc	cctgacaagg	gtgctcccca	32580
ccctcaccag	aggctcctgc	tccttccagg	tgccgcctc	ggaacccttc	ctcctctcca	32640
tccttctctt	ttttgtttct	tgttgttttt	ttgaaatgga	gtctcaccct	gtcgccccgg	32700
ctgaggagtg	cagtggcgca	gtctcggtc	actgcactct	ccacttcttg	ggttcaagca	32760
attccccctg	ctcagactcc	ctagtaggtg	ggattacagg	tgtagcaccac	cacacctggc	32820
taattttgta	tttttagtac	agatgggggt	tcaccatgtt	ggccaggctg	atcttgaact	32880
tcacaacctca	agtgatctgc	ctgcctcagc	ttcccaaagt	tctgggatta	caggcgtgag	32940
ccaccacacc	cggcctctcc	ccatcccat	cttatctctc	agaaagaggc	ccagggagcc	33000
acagccccctc	ctgctccagg	ccaaggcact	gaccaagcct	gtccgggagc	acctgtcttc	33060
ttgcaggccc	tgcccccggt	ggccgcctcc	gttgaactc	ctgggggggtg	ggggatggag	33120
gactccttgc	cttctccgc	tcctcggtg	cctccagccg	cttttgagc	tcctccaggg	33180
aggtgtcctt	cttcttgggt	ggggaggaga	gcatagggct	ctctggggac	aggtcagaag	33240
gggacttgag	gatgacctcg	aagctctggc	ctgaggcccc	cttgtccagc	tgcttcacct	33300
ccatgtctgc	agggcaagac	cagagtagag	cttcagaggc	ccggccaggg	catggcggtg	33360
gctgagcggg	atgtccccag	cacacatcca	accccagggc	tgggcgagag	gggggtggctg	33420
ctccccgagg	aatcccaggc	ttcagccccc	aggatggggc	ccttccccct	agaacctccc	33480
tctccagagg	cagccaggac	gggagttcag	agagactgcc	ggaggccggg	ggaaaagggtg	33540
aggtggggcag	gcaccgagc	gaagggcagg	cgccagccag	gcactcacc	ccgtactggt	33600
agacggtatt	gggggtcggc	tgtgtgtaga	agcaggagca	gatgagcgac	agcaccgaca	33660
gctccttcat	cttctccttg	taggctgtgg	gcacaaggct	gggctgagca	agcaccactg	33720

gggcctgccc	acctgggccc	ccgttttccc	tcccatggc	tgcctctatc	atgtctctgt	33780
gagacacgga	gctgcccagc	acgtctctct	gtgtgtctcc	acaccgccc	cccttctctc	33840
tctccagctc	tctcgcttcc	agacgtcggc	actgtctccg	tgggtgtgtc	cctgcccctc	33900
gtctctctcg	ccctctgccc	ctccccgctt	ttcctctctc	tcggcattaa	tgtctgtctc	33960
atcttccaca	ctgacttggt	tctccatcct	tctcctgcct	gctgtgggtc	gaatgtttcc	34020
attacccaaa	actcatgtgt	tgaatcgta	accccaaggt	gccggtgtgc	ggaggtgagg	34080
cattcggagg	gaattaggcc	atgaggatag	agccctccta	agtggcccca	gagtggggct	34140
tcagagaact	ccctcacctt	ccatcatgtg	aggacacagc	cagaagacgc	caccctgcta	34200
tgtaccagga	ggcgagacct	ctccaggcac	cgactctgcc	ggcaccttga	tcctggactt	34260
tctggcctcc	agagcgatgg	gaaataagtt	cctgtctgtc	ataaaccact	cagtctcagg	34320
tacctgccc	gactgacaaa	gtggctaccc	ctgcctgtct	gggtctctgt	ttaccttctg	34380
tgtgtctgac	tctgtcactg	tcattgtatc	tttctgtgtc	tctgggggta	gcccctgact	34440
ctgtctttct	ccctgagtgc	atctttctgt	gattccttgt	cactgtgtgt	ctttctgact	34500
cttacctccc	tctgtcccgc	tacttctctc	tccctcctc	ctccttccc	ctcctggcca	34560
gctcaagcag	gcaagattta	ctcatgacgg	gaccagcaca	gatgcaaac	ctctgtgggc	34620
aggactttct	tgggctgtaa	acctggatga	agccctcaga	ccctcctttt	tccttcccaa	34680
tgattgtgtg	gtcaccttga	gatgaaacca	ggcctctccc	aggcacatgc	tctctgtcta	34740
tctagggtcg	ggcttggggc	actgatgcca	ccaaggagca	agggagggaa	gctgtccgtt	34800
cagcaccaca	gccagccctc	ttgcccatc	aggtcaatca	agtgccacc	agccagtgtc	34860
cctgctgccc	aacccaaacc	agaagcaagc	cgggctctcg	tggccctgtg	ccctgtcagg	34920
ggaagaggaa	ggcgctgtct	gtcacagtga	aaataattta	gctcttttgg	tctattcagg	34980
gcgaacctca	ttcctaagca	gacacgctgg	cccggtttct	cactagtgtc	cgataatcct	35040
tttggctggg	tgcagtggct	catttaactg	taatcccagc	actttgggag	gccaaggcag	35100
gtggaacacc	tgaggtcagg	agtttgagac	cagcctgacc	aacatggtga	aaccgatctt	35160
ctactaaaaa	tataaaaatt	agccaggcgt	ggtggcaggc	acctgtaatc	ctagctactt	35220
gggaggctga	ggcaggagaa	tcgcttgaac	ctgggaggcg	gaggttgtag	tgagccgagg	35280
tcgcgccatc	gcactccagc	ctgggtgaca	gtgtgagact	ccgtctcaaa	acagaaagaa	35340
aaagagagag	aggaagaaaag	gaaggaggga	gggaggagg	aaaagaagaa	aggaaaggaa	35400
aggaagacag	acaaggcaga	agtaatcaag	ccttctatgg	tgagctgggt	cttctgggtga	35460
cagtcacagag	aatggtctgt	cctgacttaa	atttctctgt	gacctacact	tttctggaca	35520
gagcagcaca	gagcccaaga	gggtgttaag	aggagcagaa	aggaatccca	gggtgggcag	35580
gcccgtgcga	gagccttttg	gggaaggaa	gagactttga	gccgggaagc	gaggcaaagc	35640
tacctgtctt	ggtcattgtc	ttcagggagg	gagatggagg	gggaccaggt	gggggagcct	35700
cacaggggac	tttgggtctga	cttgtcaagt	tttctttttt	tcttttttag	atggagtctt	35760
gcactgttgc	ccagggtgca	gtgcagtggg	gcgactctcg	ctcaccgcaa	gctccgcctc	35820
ctgggttcc	accattctcc	tgcctcagcc	tcccagtag	ctgggaccac	aggcaccgcc	35880
accacaccca	gctaattttt	tgtattttta	gtagagacgg	ggtttcacta	tattagccag	35940
gatagtctcg	atctcctgac	ctcgtgatcc	gcccgcctcg	acctcccaaa	gtgctgggat	36000
tacaggtgtg	agccactgtg	cctggcctac	tttatttttt	agaaacagga	ctgtgctctg	36060
ttgcccatgc	tggagtgtag	ggtgcagctg	tgcggttcac	tgcagccttg	aacttctggg	36120
cttgacggat	cctgccatct	tagcagctgg	gactacaggt	gcatgccagc	acaccagttt	36180
tctttttttt	tttatctctg	ctcactgcaa	ttccgcctcc	tgggttctag	cgattctcct	36240
gcctcagcct	cccaagtagc	agggattaca	cgcacatgcc	accacaccgc	gctaattttt	36300
gtatttttag	tagagacagg	gtttcactat	gttggtcagg	ctgggtcttga	gccaccgcgc	36360
ccgcccggcc	tacacaccag	cttaaaaaaa	agaaaaaat	agctgggctg	ggtggctcat	36420
gcctgtaatc	ccagcacttt	gggaggctga	ggcaggcaga	tcacctgagg	tcaggagttc	36480
aagaccaacc	tggccaacat	ggcgaaaacc	tgtctctact	acaaatataa	aaatcagcca	36540
ggcgtgggtg	cgggtccctc	taattccagc	tacttgggag	gctgaggcag	gagaatcact	36600
tgaaccggcg	aggtggagggt	tgaagtgagc	caagatcgag	ctactgcact	ccagcctggg	36660
agcaagactc	ccgtctcaaa	aaaaaaaaaa	aaattttag	tgggtatggg	gccgggcatg	36720
gtggctcacg	cctgtaatcc	cagaactttg	agggggccaa	gcgggagcat	catgagggtca	36780
ggagttcgag	accagcctga	ccaacatgat	gaaacctgt	ctctactaaa	aataacaaaa	36840
attagccagg	catggtggcg	ggcacgtgta	gtcccagcta	ctcgggagac	tgagacggga	36900
gaatcgcttg	aaccaggag	gcagaggttg	cagtgtgctg	agatcacgcc	actgcactcc	36960
agcctgggtg	acagagttag	actctgtctc	aaaaacaaac	acaaacaaac	atatatatat	37020
atacatgtat	atatataata	tatatatacg	tatatataca	cgtgtatata	tataatatat	37080
atacgtatat	atacagtggt	atatataata	tatatacgta	tatatgtata	tattaatata	37140
tatacgtata	tatacacgtg	tatatattaa	tatatatacg	tatatataca	cgtgtgtata	37200
tattaatata	tatacgtata	tatgtgtgtg	tgtgtatata	tatatgtata	tatatatata	37260
tatatacata	tatatataca	gagagagaga	gagtagtgat	aggtcttgct	gtcttgtcca	37320
ggctgatctt	gaactcccgc	cctcaagaga	ccctcccacc	tcagcctccc	aaagcactag	37380



gattataggt	gtaagccaca	gtacctagcc	tattaaaaat	taatgttaaa	caagaggatg	37440
tgatgagga	gttagaggg	gtgccagcca	tggtttccac	agcagcaggt	caggagacat	37500
tggggacatt	tagaggagct	gaagaggtgg	ccaaccctgt	gctcaggagg	acgggggagg	37560
gagagagcaa	gagggagttt	gggctggggc	agaacgtacc	tggttcctga	gaggataaga	37620
aggtagggac	ttggccccctc	caggcctgac	tctgccagca	accagctccc	tatcagcaga	37680
ctccaggccc	ctacccttca	gctcatcctt	ccttatcaca	catccaaaac	tctgaatgtg	37740
gccggggcgca	gtggctcacg	cctgtaatcc	cagaactttg	ggaggctgag	gcaggaggat	37800
cgcttgagaa	caagagtttg	agaccagcct	aggcaacatg	gtgaaacccc	atctctacta	37860
aaaatataaa	aatttagctgg	gtgtggtggc	acatgcctgt	tgccccagct	actcaggagg	37920
ctgaggcagg	agaatcactt	gagcctggaa	ggcggaagtt	gtagttagca	gagatttgtc	37980
cactgcgttc	cagcctgggc	aacacagcga	gactctgtct	caaaaaacaa	aaactggaat	38040
gtgtttacca	taaaggccag	aaaatgtgat	taacagctgc	tcaaagcccc	tgtctgccct	38100
aagcctgaaa	ttttcaccga	aaaaaagatc	tgtaggctca	tacagaggaa	ggacaaaacac	38160
cagggaggct	ctcttccagt	ttgcttcacc	tcagcaagca	gacggctggc	agcaatttgg	38220
gggcagggtg	gagcacctgc	atcatcagga	aagaaggggc	acggtgggga	cgcaggtcag	38280
acctctcaca	ggtcttggct	ctgcccagga	gacacgtgtc	caactgagag	gtgaggaact	38340
gggttctgca	gctgcagaca	caggtgcggc	tcagcatctg	atggccacgg	agacccccctg	38400
gcttggtctt	tcccagctgg	tgggccatga	ggagcttcta	tcccagaga	ctgtccctca	38460
aggagcaagt	gggaccaggt	acccacagga	cggagcctgg	gagttagggc	tgccctgtgg	38520
tctggctaca	gggaggaagg	gcagatttga	gggggcagga	cagcagggtca	ggaattggcc	38580
aactctggag	agagcaagca	aggggaagtc	tgcgcacagg	gcagggtgg	tcaggggcga	38640
ggcaggcat	tggaccagta	ttttcagagc	tggttaggct	taaagagcat	gtctactgcc	38700
tcttattaca	gagagaggat	gccgaggccc	agaccatcc	aggccacctc	tccacagaca	38760
cagctggtgc	cagggaaagg	cctcccagag	cctcaaggca	ttgctccctc	tctctctctc	38820
tttttgtttt	tttgagacg	gagtctcact	ctgtctccca	ggctggagtg	cagtgggtaca	38880
atctcggttc	acggcaagct	ccgcctcccc	gattcacgcc	attctcctgc	ctcagcctcc	38940
cgaatagctg	ggactacagg	cgcccgccac	cacgccagc	taattttttg	tatttttagt	39000
agagacgggg	tttactgtg	ttagccagga	tggtctcgat	ctcctgacct	tgtagccgc	39060
ccgtctcagc	ctcccaaagt	gctgggatta	cagggtgag	ccaccgcgcc	tggaactttt	39120
ttttttttta	agacggggtc	tcactctgtc	acccaggctg	gagtgcagtg	gcgcgatgtc	39180
ggctcactgc	aacctctgcc	tccccagttc	aagtgattct	cctgcctcag	cctcccaagt	39240
agctagaatt	acaggcacat	gccaccatgc	ccagctaatt	ttctgtatct	ttagtagaga	39300
tgaggtttca	ccatgttggc	caggctggtc	ttgaactcct	gacctccggt	gatctgccc	39360
cctcagcctc	ccaaagtgtc	gggatgacag	gcgtgagccc	ccgcgcctgg	ccccccgcag	39420
tgctgggatt	acaggcgtga	gcccccgcc	ccggccccctc	cctctctttg	actcccttct	39480
ttctcaccgc	ccccccccca	ccatccttcc	ccttcaactga	cttcaggagg	ttaaaaacaa	39540
ttctcgagct	gagctgggct	tgttttgtct	ccctgcttct	ctttgtacta	aacattagat	39600
accgaggaaa	tgcggtattg	cctttggatg	attcatgagc	aggagtcaga	aaaaggcacc	39660
aggttggcct	caagcagcag	ggtatagtag	tgcccgtctc	cagggtcaca	cctcacgcc	39720
accctcccg	ccgtccaggt	ggatgggtgc	cactcccagg	gtcacacctc	acgcccaccc	39780
ctcccgccgt	ccagggtgat	ggtgcccact	cccagggtca	cacctcacgc	ccacccctcc	39840
cgctgcccag	gtggatgggtg	cccactccca	gggtcacacc	tcacgcccgc	ccctccaccc	39900
caccgggtg	gatgtgtccc	gctcccaggg	tcacacctga	cgcccaccgc	ggtggatggt	39960
gcccgtctcc	agggtcacac	ctcacgcccc	ccccctccgc	ccgcccgggt	ggatgggtgc	40020
cgctcccagg	gtcacacctc	acgcccaccc	ctcccgccgt	ccagggtgat	ggtgcccact	40080
cccagggtca	cacctcacgc	ccacccctcc	cgccgcccag	gtggatgggtg	cccactccca	40140
gggtcacacc	tcacaccac	ccctcccgcc	caccgggtg	gatgccctta	tcagctctcc	40200
ttctccttct	ctttcgtctt	cttcgtcttc	ctcctcttct	ttcttctttt	tttttttttt	40260
tagaaagagt	ttctactctt	gctgcccagg	ctggagtga	atggcacaa	ctcagctcac	40320
tgcaacctcc	ctctccccgg	gtcaagcaat	tatctgcct	cagtctccca	gattgctggg	40380
atcacaggag	tgtgtcacca	cacctggcta	attttgtact	tttagcagag	aggggggatt	40440
tcaccatggt	ggccaggcta	gtctcgaact	cttgacctca	gtttatccac	cgccctcagc	40500
ctctcaaagt	gctgggatta	caggcatgag	ccacctatc	tgctctactt	ctacagagga	40560
ggaatgaagg	ctcagagagg	gcaagcatte	caccagcat	cacacagagt	gccgggtgag	40620
agcccagtc	tgagcctggg	cctgactgca	ggctcctgtt	gggagctcgc	ggaggtgggg	40680
gatctgtcca	gaactgagag	gccaggggac	cacagtggcc	tctgacccct	ggagggccct	40740
ggaggtgtgt	gccggctccc	ccggggggca	gatggagggtc	actgtcaccc	aggctgcttc	40800
tcatggtgct	aggagcacag	catggcagga	gccaccagcc	gatttgctct	tccctgggca	40860
ggaaaactcag	aaatgtgggt	accacagtca	ggctgcttga	cgtgcggtga	gcactcatct	40920
cttagcaggc	aagcgggcaa	gcacctttcc	tgaatatattg	aggcctcaga	acaagcccca	40980
ggagaggtgc	cagcaccgtc	atctctaccc	agataaggag	acccagggtcc	tgagaggtta	41040



ggcagctcgg	acaacaccac	acagctggag	gaggtcagac	tctgggttgc	agaaggagaa	41100
tgtgagcaga	ggccacaaaa	gagcgaggag	ccagtgccca	gatgccgaga	tgccctcgcc	41160
ctcccagctc	agccccagga	accgagccca	tggggaggga	ccgtcaggga	aaggctgtca	41220
ggaagggcag	gagggcgccc	tggagaggac	ggcgtgccc	tcaggggcag	gaggggagtc	41280
ccctccgctg	agagccccc	cacccccagt	atccccgggg	gtgtccagga	ggaggcgag	41340
ggaggaagcg	cagatggaca	ggactcccag	atagggtggg	gaggtgtggc	cggtagacaca	41400
cacggtcccc	tcctggcagg	tgctgaagtc	acctggagcc	tccaagcccc	tggggcctga	41460
ggggcggggt	caggtcgggc	acgctgggt	ggcggaagt	ctgcgcccc	ggccaaggcg	41520
cccgagttga	accagtacg	tcgggagagg	gaccgcgcg	acctgtcccc	ggggcgtaag	41580
aaaaggtggg	agggagtcg	gctcgtgaac	ggggcgggcg	atgggaagga	ggtgcggccc	41640
ttcgtcctgt	cctcccaaac	gtcagtgaa	aaacgaagcg	ggttctgcgg	cctcgcggcg	41700
gagcagagcg	tttcgggaag	ggcgggcccc	gcgtcctcgc	gcccagagtc	gcccggcagc	41760
tccctcgcgt	ccagaatccg	ccccccgccc	gggcctgcgc	ccgccccctc	gcctgagctc	41820
cgcgcgggac	gggcccggag	gcccgggtgg	gcgtacctt	cgaaggcgg	gggtccgccc	41880
cgcgggaggt	ggagggcgcg	gagggcgga	gcctctggt	ctccggagg	tttggggatc	41940
gcagtcgccc	ctccccatc	cagacccgc	ggcgcaagg	gcagtggtt	ttctggccag	42000
agcagggtgg	gcgggcgtcg	caaagggtgg	tccccgagc	cgcagcgtg	tggggggagg	42060
gcgcggtccc	cctcactccg	ggctccgccc	tgcttgccc	gccccctcc	ttcagcgccc	42120
cctccagccc	ctgtgctgca	ctggcgcggg	gagcgccgg	ttcccggtg	gggctttggc	42180
agagggctcc	accctctccc	cgcctcccca	cgaaggctct	ggcgaccaca	gatctcgggt	42240
cgccggacgc	cccagggacc	ccgcccgcac	atcgcgagcg	cgcccacccg	gtcgcgagcc	42300
cacgcccggg	tctgggagcc	accctgcggc	agtcgcgccc	tgcgtggcac	gctgctcccc	42360
cagggcgag	gcgccccgc	ccgacgtccc	ggtcccgagc	gctccccggc	gcggcgccct	42420
gcagcccagc	gccccaccag	ccccgcggc	gcccgcagac	ccagcctcgg	gcgggtcggg	42480
cccaggcttg	caacgcgcag	ggtaggagaa	gggaaattgg	cgtccgctgc	cgcccgctgc	42540
cccaggcgag	gccagacgag	gcctctgctc	agatcccgc	gccccacaaa	gcccgtggcc	42600
ccggagccta	ccgaaatagg	tgctggccat	ggtgctggcg	gcggttgggc	ctgcggaggc	42660
tggagaggcg	caagtggcgg	ccggagctgc	agacggctgg	tgctgcagtg	ccggggaggg	42720
gaggggagag	gagtggaggg	agcgaggcg	ggcgggaggc	ggcgcgggcg	ggagagagag	42780
agggagggag	acagagggag	agagagagag	gggtggggga	aggagcgggg	ggaggaggga	42840
gggaggggtg	ggggaaggag	agagagagag	agagagactg	cggggggcg	ggaaggaggg	42900
agggaggaag	ggagggaggga	agagagagag	gagcaagcgc	ctggctgcgg	aagggggcgc	42960
ggctctcagg	gggagagggc	ggaggagggg	ggctacccga	actgcaacaa	gacccccac	43020
cctccaaccg	ctcacagcgg	gacagctgct	tctccaactt	ggctttgtga	ggcctgagag	43080
tgggggtggg	gtggagatga	gcccccatc	cccagggcag	gcggggcagg	ggcaatgccg	43140
gaggagcagg	tcccacccat	gggggtgggc	cgcagagctc	ttcgccgcca	aggccgctgt	43200
aggctgggct	ggcgccaaca	gggtccaggt	ctgtgctgc	catcggagag	gatgccacag	43260
ccacaggggt	ggcgctggc	ctggaggcct	ccaaggggca	tctcctgtga	gcccagggga	43320
tgggcaggat	ctgagcggag	aagagtgaag	gtggaggagt	gagggcagaa	caaaggcttt	43380
gccgtgaaag	aggtggtttc	ccgcctgggc	tcagaccttc	actcactgtg	tggcccaggc	43440
caagggcaag	cgtctgacct	cgtcgggcct	ttgtttctca	ggggtagat	gaaacaatga	43500
tgcccccaga	cgatggagag	gaggggtgcc	agggttgtgc	gcacttagtg	agtggggggc	43560
aacctatcct	gcctccccct	ctcctcataa	ctcccaagg	gaaagcctgg	taggcaaacg	43620
gagcgtcttt	gccattgcag	ggatgaagc	accgagcgag	ggagaaaagt	gctttgccct	43680
acaagcaact	aagtcatagg	gccaggagca	aaacctgaa	aacctcagga	gacttgacag	43740
gccatgaggc	tggctcagca	acacaaaagc	caggggcaag	cctcagctct	agcagtgccg	43800
tgggagcacc	caaggccagt	cacatcctag	ggtggcctgg	agagtcctga	cccctgacgt	43860
gcaagccggc	atcatccccc	ggactgtgag	tctggtgggg	gtgatgccc	ggaatgtgac	43920
attgtgtggc	ccagaggtac	ccttaagact	ggaggtcac	caggggggccc	ctgacctcat	43980
cacaggagcc	ctttaaaagc	agtttctctt	gcctgggtga	agaaatcgga	gggatcaaac	44040
caaagaaggt	tttctgttgt	tgagatgagg	gggccacgtg	gcaaggatct	gagaactgct	44100
cccagccaac	agccagcaag	acaacaagac	cttaactgca	aggaagtgg	ttctgccaac	44160
aagaagagaa	tgggcttggg	ggcaggtttg	accccagggc	ctccacacaa	gaactgagcc	44220
caactgccc	cttggtttca	gccttgggtt	actaagaatt	aggaggtaat	gaatgagagt	44280
tgttttaagc	tggttggttt	gtggtgattt	gctatgaagc	catatcaaac	taatatacac	44340
acagaggtgt	tggccccctg	gccattccta	ggaagccagc	tctgcgaagg	aggaagaagg	44400
gcagagaggc	acacagagct	gcccaccaca	gcagctgtgt	cctccctgtt	ggccaccaca	44460
gtagcagttg	gggatgggtc	ggcagactcc	agccccgggt	gctggagctc		44520
aggtgctagg	gatcaagaga	agtagccctc	tctgggacct	ccagagtctt	ctcatgtggg	44580
tggggtagga	cccacccagt	caggctcaga	gcaccgcaat	gcctcacact	cattgtgact	44640
ctggccaggc	cctctctgag	cctctgtgtc	ctcatctgga	gcacagggac	caggtgtgtg	44700

gaagcccg	gcatagtgc	aggaacacag	tagatgtgca	cagtgtgcac	tagcaggaac	44760
acacaacagg	ggtactgact	gtcagcacct	aggcaggcac	acgcaatggg	gtactgactg	44820
tcagccatac	tgactgtcag	cggtgctagca	ggcatacaca	acagctgtac	tgacagcaca	44880
ctagcaggca	catgccatag	gtgtactgac	tctcagtgc	ctggcaggca	cacgcaatag	44940
gagtaatgac	agcatgtctg	caggcacaca	atagctgtac	tgactgtttg	ccccaatata	45000
gtgccaggtc	ttggagcaga	ttttgacttc	tcaccaagat	caaatgcaga	aagtgcacga	45060
gcattttcaa	gatgtttttc	acatgcacat	tagtgctagt	taaaaaaatg	ttttgactgg	45120
gtgcagtggc	tcacaactgt	aatcccaaca	ctttgggggg	ccgaggtggg	cagatcacct	45180
gaggtcagga	gtttgagacc	agcctggcca	acatggtgaa	accccatcta	ccctaaaaat	45240
acaaaaatta	gccagggtgtg	gtggcagggtg	cctgtaatct	cagctacttt	ggaggctgaa	45300
gcaggagaat	cacttgaatc	caggaggcag	agggtgcagt	gagccgagat	cccaccactg	45360
cactccagcc	tgggcaacaa	tatcaagact	ccacctcaa	aaaaaaatg	tttttcataa	45420
agtgtgactt	ttatcagacc	tctgcattct	tgaaattaac	tctggcttgg	ctgggcgtgg	45480
tgccccacac	ctgtaatctt	aacacttttg	gaggctgagg	tgggcagatc	acgaggtcag	45540
gagttcaaga	cagcctgac	caacatgatg	aaaccccatc	tctactaaaa	atacaaaaaat	45600
tagccgggcy	tggtggcatg	cacctgtaat	cccagctact	caggaggctg	aggcaggaga	45660
atcgcttgaa	cccaggaggt	ggagggttgc	gggagccgag	atcgaccac	tctattccag	45720
cctgggcygac	agagcaagac	tctgtctcaa	aaaaaaaaaa	gaaagaaaga	aattaactct	45780
ggctcctaga	aggagcccta	tatctcagca	ggacactcag	tattcaaca	gacatctgtc	45840
aagcacctgc	tgtatgtctg	agctgtgggt	acgtcagcaa	ttagaggaag	agggcagggg	45900
tacaggagtt	cctgaccacc	ccaggccagc	acgctcctat	agcagctggc	aaggagcaga	45960
tgactcagac	ttcagctcag	tccacaggac	agccttttct	ggccactgct	ctcaggagat	46020
gagatgtgtg	gctgcaaaag	gtaaaactct	ggctcctgag	caggctctgg	gcaatctgct	46080
caacgctctg	tgctcactt	tctcaccag	aaagtgtgga	caatgagagg	acttatctgg	46140
ctgggcygcy	tggtcacgc	ctgtaatccc	agcacttttg	gaggccgagg	cggttggtatc	46200
acctgaggtc	aggagttcaa	gacctgcctg	gccaacacgg	tcaaaactcca	tctctactaa	46260
aaatataaaa	aattagccgg	gcttagtgggt	gcacacctgt	aatcccagct	acttgagagg	46320
ctgaggcagg	agaatcactt	gaaccagga	ggtggagggt	gcagtgaagg	aagattgtgc	46380
cactgcactc	cagcctgggc	aaaaagccaa	aactctgtct	caaagaaaaa	agaatcatgg	46440
cagaaggtga	agtcctatgt	agtcccagtt	cccaggctct	acatggcggc	aggagaaaga	46500
gagagagaag	gggaaactgc	cacttttaaa	ccatcggtgc	tcttgagcac	tcactgtcag	46560
aacagcctgg	aggaaactga	ccgcatgatc	caaccacctc	cctccaggtc	cctccctcca	46620
cacgtgggga	ttacaattcg	aggtgagact	tgggtggaga	cacagagccg	aaccatatca	46680
gcatgtatgg	ggggcactga	aacttgtgct	tggtgcccct	tcattcaacg	agtgtgtgtg	46740
gctggtctcc	tcactttcaa	ctccctgccc	agctcagat	aggcagcctg	cagttccttc	46800
accacaacag	gcacatgggg	ctgggtgcca	gtgagtgtg	gggcttctcc	gagcactatc	46860
tcacacccag	gagcgtgggc	acgcatggca	tctgcatgtg	ccgtcagtgg	acattaaaca	46920
cagccatgaa	gaagccacga	agaagtgtct	cctgcccggc	gtgcgcggtc	acgcagcgcc	46980
aactccctcc	tggggccttc	tggggccttc	tggggcatgg	gagctggggc	cgctgagac	47040
aaacatccgt	gacgctgggc	tgacccca	gaacgggtgc	ggcctcgctc	ttggagttag	47100
ccctgtctgc	agccagtggc	gggtgtctgg	gactcagggg	ggcccgcggg	gacctgagc	47160
ggacagttag	ccgagcagaa	gctggaacgc	aggagaggaa	ggagaggggg	cggtcagggc	47220
tctcaggagc	cggtcctgg	gcaaggcgca	gcgcttttca	aattttcagg	aaagcggtcg	47280
gctcacactc	gagcagtaaa	aagatgcctc	tggggaggag	gcccgtgag	ctctccgggc	47340
aatggtggtg	gctcgcccta	gagaggcggt	agtggaaacg	agaccctggt	gggggaatga	47400
catcaaggga	ggagacgggc	gggaccccag	atttctgcct	gtgggcgatg	gaagttaggt	47460
tcactggcca	gcggagccgg	acacagaacg	cgcaaaacgc	cgtgtaggcc	tggaggagcc	47520
gaagagcagg	cggacccccct	ccgcggggga	acagtttccg	ccgggagcac	aaagcaacgg	47580
accggaagtg	ggggcgggaa	gtgcagtggg	ctcagcgccg	actgcgcgcc	tctgcccgcg	47640
aaaactctga	gctggctgac	agctggggac	gggtggcggc	cctcgactgg	agtcggttga	47700
gttcctgagg	gacccgggtt	ctggaagggt	cgccgcggag	acaagtgagc	agttagctgc	47760
agtgaacctc	caagtgggtc	ttttacccga	gcggtctgta	ggcgcggttc	ggtttttcga	47820
aactacagct	cccgccaggc	cccaagccgc	cctcgggggc	gcgggtcggc	ggattggccg	47880
cgctgcattt	tgggacctgt	agtttccctg	gctcgtggcg	ctggcgccgc	ggcgttggtc	47940
gagcccttga	ccggggctgg	agggaagggc	cgacattcag	tgtgtccgcg	tctgttctgt	48000
tagtcccagt	tcccggggcg	gattgaggct	tagaagaagt	gagtgaattg	ctgagggtcg	48060
cacgggttgg	catcccgcca	tgctctttcg	ctactttggc	tgcatctggt	tgcccaccgc	48120
ggcggaatgg	gaatggactc	cagccagcca	ggagggcaga	gggctggaga	ggcagggccg	48180
gaggttcaga	ccctccgctc	tgacgttgcg	cctgggtgag	ccgggagggg	tgccgcttgc	48240
ctcttcagcc	ctcacgctct	tgtggaagtc	gcggaattac	tgacggcgga	acttgagcga	48300
ctgtgggcyg	cttttccaga	gaaggacgga	gttgtggggc	gggaggataa	ggcaaggccc	48360

agccacttcg	catcttcgcc	ccgccagctc	ctcgagatgg	gatataccag	ggttgctctc	48420
caaccctctc	cgcaggaggg	actgatggaa	acgcctggga	aagtagcccg	gtaccacaaa	48480
aggctgtcta	caaacagagt	cttactgtct	ttcccaggtc	tgtgccatag	ggattctcga	48540
agagaacagc	gttggtgtcc	agtgcacatg	ctcgcatcgc	ttaccaggag	tgcccagagc	48600
cctaagatgt	tcggagtggt	tttttcgcac	agaccggaat	agcctgcccc	tcagccacgc	48660
tctgtgcccc	tctgagaaca	ggctgatatg	cccaagatag	tcctgaatgg	tgtgaccgta	48720
gacttccctt	tccagcccta	caaatgccaa	caggagtaca	tgaccaaggt	cctggaatgt	48780
ctgcagcagg	tagagcacag	gccccgagga	aaggactgcg	ggtgggtgga	gcttcagcca	48840
ggacggggtg	tgttccctc	ttccggccca	ttccagccag	gccccctcgg	gccagaggca	48900
gcgtctgtca	taaaaagggc	tgggtgtcca	ggtggggtca	gagagaggat	tgacaagtaa	48960
aaacgacgt	cctttgaagg	gggcccggcc	ctccacacct	gtgggtatct	ctcatcaggc	49020
gggacgagag	actgagaaaa	tgaataagac	acagagacaa	agtatagaga	gaaaagtggg	49080
cccaggggac	cggcgctcag	catacagagg	acctgcaccg	gcaccagtct	ctgagttccc	49140
tcagtattca	ttaattacta	ttttcactat	ctcagcaaga	ggaatgcggc	aggacagcaa	49200
ggtgatagtg	gggagaagg	cagcaagaaa	acgtgagcaa	aggaatctgg	gtcacaaata	49260
agttcaagg	aaggtactat	gcctggatgt	gcacgtaggc	tagttttatg	cttttctcca	49320
cccaaacatc	tcggtggagt	aaagagtaac	agagcagcat	tgctgccaat	atgtctcgcc	49380
tcctgccaca	gggcggtctt	tctcctatct	cagaattgaa	caaatgtaca	atcggttttt	49440
ataccgaaac	attcagttcc	caggggcagg	caggagacag	tgcccttcct	ctatctcgac	49500
tgcaagaggc	tttctctctt	tactaatcct	cagcacagac	ccttcacggg	tgttgggctg	49560
ggggactgtc	aggtctttcc	catcccacga	ggccatatct	cagactatca	catggagaga	49620
aaccttgggc	aatacccgcc	tttccaggcc	agaggtccct	gcggctttcc	gcagtgcctc	49680
gtgccccctg	tttatcgaga	ctggagaatg	gcgatgactt	ttaccaagca	tactgctgtg	49740
aaacatatgt	ttaacaaggc	atgttctgca	cagctctaga	tcctttaaac	cttgattcca	49800
tacaacacat	gtttctgtga	gctcaaggct	ggggcaaaat	tacagattaa	cagcatctta	49860
gggcaaaagc	attgttcagg	gtacagggtc	aaatggagtg	tgttatgtct	tccttttcta	49920
catagacaca	gtaacagtct	gatctctctt	ttccctacag	tccttgaggg	tgacagactt	49980
aggagtgcct	tgggggcctc	tctgaggagc	agctgatatt	cacgggtcag	gaggaagcat	50040
ttccattaga	ggggcagccg	gtggccagcc	tcacttgga	ggtctttgaa	cctcgggggt	50100
gcagggaggt	ggcagtgggt	caggttgcc	tctcctgggt	tccttgagg	gccctcttgt	50160
acccggtcca	cacccttccc	ctccccaggt	ttcctgtcca	ggttcccgtc	tgagagcttg	50220
tatgtaggac	gtcagatagg	acagcataaa	tgtttggtatc	cagaaacgca	gaacagtttc	50280
ctatttttgag	acttgacacc	taattagtca	tcttactatt	taagctgaaa	aatagtgtcg	50340
tgttttgggt	aacgttctgc	aaatcgtttg	ctaattggcg	ctgagttgct	tcacgccctt	50400
tagggcaaga	gtgggacttg	cctgtggact	ttcccggtg	cccacagggc	tctcgccacc	50460
tggcagtggc	ctctgcac	gcaaagagct	gcccgtggc	tgccgaagct	tgtctcagg	50520
cagcttgtgt	ggcctcgcc	cttctctggc	ttcccgtaac	ccttgctccg	aactccgttc	50580
agaaggtgaa	tggcatcctg	gagagcccta	cgggtacagg	gaagacgctg	tgccgtgctg	50640
gcaccacgct	ggcctggcga	gaacacctcc	gagacggcat	ctctgcccgc	aagattgccc	50700
agagggcgca	aggagagctt	ttcccggatc	gggccttgct	atcctggggc	aacgctgctg	50760
ctgctgctgg	agaccccata	ggtgacccta	gttcccaggc	ctctcctggc	ctcctgtggg	50820
gatgggtggc	aagggatggc	gctgaggggtg	gggtggggcc	atggggactc	ctgccgtctc	50880
tcaagcagaa	ctcaaggaga	atttttttagc	tgctgtataa	tttctcgcca	tcgtgggtgt	50940
aaacctaggg	ttgggctttt	ttgctgaatt	agggcacggc	agatgcccac	ttcaccatt	51000
tttgataaac	cagtatctgg	ggtgtcagat	tcttggctgt	ctgcagggcc	gagttagccg	51060
aatgccacct	gcctttgata	cgtgagaacg	ttgtctgaga	accgtgactt	ctgtgcttgc	51120
ttgtgtctgg	tcagcttgct	acacggacat	cccaaagatt	atttacgcct	ccaggaccca	51180
ctcgcaactc	acacaggtca	tcaacgagct	tcggaaacacc	tcctaccggt	gggtcagacg	51240
agttttacacc	tgtctcgggg	tcctcaagag	aaccagcttg	gcatggtgct	gagtcacacg	51300
ccccatgctg	tgtctgggtg	gaggggtgggt	gtctttctag	acgctcccc	gaagtgtgca	51360
gagcgctgg	gcccaggggt	gggggtgggc	ctgggctgcc	ttcaatgccc	attacttgtg	51420
aggaagcagc	tttgcatctg	tgtgtgacc	ttgggcgggc	gtcctgagct	cctcgaggt	51480
gctgtttag	cagctgtgca	gtaggtcagg	gctggccccc	agtgcagctt	tgacatgaa	51540
gtaggaggag	gccctgctgc	ttgtcagagc	ccagcagagt	cttggtgttc	tgtcgggttc	51600
ctgtggcccg	accagtggca	gggtgctgtg	gaagctgtcg	aatctcctcc	ctctgtccag	51660
taccccgct	cgtcttctag	ctccctccta	cggccgggccc	acgtttcagt	tatgctcact	51720
tcctctgacc	cccgaggctc	ctcgtgtct	ccatacagct	cacgctgcag	ggccacgctg	51780
tgggtgttgg	agacagctcc	tcctcgaccc	acgggtgctct	ctcccaccag	gcctaagggtg	51840
tgtgtgctgg	gctcccggga	gcagctgtgc	atccatcctg	aggtgaagaa	acaagagagt	51900
aaccatctac	aggttaggctc	ctgggctccc	gctccggctc	agtgctccgac	aggcgaggtg	51960
tgtgtgggtgt	ccagagcccc	aggctgcgct	cccgtgggccc	tagggtttga	agttcactgg	52020

gggactgcag	gggaggacct	gggtgggggtg	gggactggct	tcgggtccctt	cttggccgtg	52080
cttcagctgc	gcactctgcc	cttcctccca	cagatccact	tgtgccgtaa	gaagggtggca	52140
agtcgctcct	gtcatttcta	caacaacgta	gaagggtacaa	gcagctgggt	gggaccagggt	52200
tcgggttgga	gtgtgtgcag	cctctcaggg	tggagctcag	tgggtgcaca	gcctgggtgt	52260
gcttgcccgg	tggggcgcc	agtgcggcca	tgtacctggg	ccctgtcttc	tgactcgggg	52320
ccaccatgt	tagacttctg	tgtggaagag	ctcacacagt	ggtctgagac	agccagccgg	52380
caagactgcc	tctggctggg	gcctggggcc	ttggattttg	ggaaggctcc	ctccatttcc	52440
tgatgagagg	gtctccctgc	acctaacctg	ctggtgcata	cagtaggggt	tttgcgtaac	52500
accggctttc	tcttcgggga	ctttgttgct	tgcccagcag	cagggtgctcc	agtgaccggc	52560
cctcatacca	tcttggggagg	gtgtcctgga	agccgtgtct	ggcctcccgc	gaccttgccc	52620
cgtgtgtctt	tttctgtgc	tgacctgtct	gcggaaaatt	atggccctga	gtgtgactcc	52680
aggctgagtc	ctgtgggtcc	aacacgggat	gccttggggc	ctcttctgga	gacgggatgt	52740
gagtgcacagg	agccggcccg	ggcagcctgc	cctgtgactg	cacgtggcca	cagcctgtga	52800
gggcccgggg	tgcttctcca	cccacgtggc	tgcccctcgg	gtatgtcaag	ggcttctggg	52860
gctcatcacg	gggtcctaga	gacagtggca	gggtgcaccc	ccgttggtcg	cccttacagt	52920
ttctgtgacc	tgagggtggc	atctgtgcag	tcggcgcggt	ctgtgcttct	gtgggatcag	52980
ggttccctct	gtttcctgcc	tcagttgggg	ctcaagcctc	aggtgaggtg	gccccggagc	53040
actcagaagg	catcgccggg	cctgtgggct	gctttctgca	ctcacgtttg	ctgagtgtct	53100
agtgtgccag	gactgaggac	cctgaagctg	ctcttgtatt	tagggcgggc	ctcccctggc	53160
agagactgag	ccaggtgggt	ccgcatgacc	cactaccagg	cgtttctggg	ccctggccct	53220
tggagggaca	gggtggggcg	aacatggggc	tgcaaggagg	ctcccgttta	ctggaggcat	53280
gtgctgtgtt	gctggagaca	tcctctgtgt	tgcttcttgt	tcgctgtggt	ttttggtctg	53340
gtggcaccaa	ggaccctcag	tcactctgat	gtgtggttgt	ccaggccttt	ttgttggtcc	53400
taagaagggg	ctctgccttt	gtgccccag	gttccctgac	aggagctgcc	ggctcgtccc	53460
gggtgatgct	gcaggacgtg	actctgggac	ggggggttgg	gcagatgtgc	tgatggaaat	53520
tctcaagcag	gcgtcatttc	cgaggctcct	acctggattt	ccaggacagg	agtgcctgct	53580
gggtgtcccc	agtcctcatg	agcgggggtc	cttgggtag	catggaacgc	tgagcatggg	53640
cctggccggc	cgtggtcctg	gacaagggca	gtgccccggg	ggctgctggg	cctgggacct	53700
gggtggggacg	ctgggacctg	tacctggtgg	ggatgctggg	cctgggacct	gggtgggagg	53760
cctctgactg	cctcctgggt	ctgcttccgt	ctgtgttagg	cctctgggta	ttggggcccc	53820
catctgtctc	ctcctccagg	cctgtggact	cagaccagga	agacacaggc	cagccccctg	53880
ctgtccccct	tggcttgggc	tctcactgcc	cgacctggcg	ggagggttgc	tagccgtgaa	53940
ccttcgcacc	ctgtctgcca	ccggacaggc	tgtgaggggg	tgtctgcagc	acctgcaccg	54000
gcctgagcat	cttcagagtg	ggctgcagct	cctggagggg	tctgagagga	agggaggcag	54060
gtatttttgg	cgaatgagga	gacagctgga	gagctggcac	ccttcctggc	ctgctcctg	54120
tgaggactct	gggtggggac	agcaagcttg	gggtcagcct	ggggcagagc	ctctgggacg	54180
gccccgcccc	tcgtgcccc	tcctcctgca	gctcctgtcc	tcgccccgcc	ctcagctctc	54240
cgccaggcaa	ggtttggcaa	gtgcccgtgt	gcggcagtg	ctgctgattg	gctgggtctg	54300
tgtatgtgtg	ctgcccaggg	gtgtgctttt	cctcccctgc	cttccctgct	atccctggga	54360
gtatctgggg	ttgggtcatc	gctgggtgtg	gtgagtggtg	gtgtgtgtgt	atgtgcacgt	54420
gtgcatatgt	gtgcgttctt	ggcctctgca	gctgagctct	ggcctcggg	ggccttgga	54480
cctcctgggg	acaggcaca	agcagccatg	atggagtcgg	gagctggggg	aggccccatt	54540
gccccacgtg	gctgcctgtg	gactctgggg	tgcttgttag	aagaggtatc	tgggttctgt	54600
tgtgttttaag	caactcccta	aggaattctt	gtgggttccag	tttggggggc	ctgtactgta	54660
gaggcaaggg	aggggcagga	catccccag	actctgactt	ctgaagcctt	ttctgcccgg	54720
ggcctctccg	ccagtacagg	cagtgtcctt	tgccagggct	gccatgctgc	agaggggagt	54780
gggccactgt	ttagcccgag	aaaacctggc	tctcccttag	ctggaagttc	tgggacctgt	54840
gtggttgcca	gggaagctga	gtgacgggtg	taatcacagg	ggcacctgca	gggggtttgt	54900
ggagatgcct	ctgtgggttg	gggcgatagg	ctgaggggct	gttcttccct	gccctgagga	54960
gggtgagtg	tagccgccac	tcctgtcctg	tcttgggtcg	tctcgagag	gatgcgtaga	55020
accctcgagg	ctctgctggc	ctccgtctgg	tccacctga	acctcaggcc	ttctgggggg	55080
agaggaggat	tccctcagga	tcactcgggt	gggggcctct	cttgggcacc	tgagaccctc	55140
agtgggtgct	ttgtggcgcg	ttcacggttg	gtgggggacg	cccagccctg	cccgcctgtg	55200
aggagccgtt	ctgtcctggg	catccccctg	tgggtctggga	cttagtggac	cctgaggggt	55260
tgtgtttacc	cctgcctcac	acctgcagaa	aaaagcctgg	agcaggagct	ggccagcccc	55320
atcctggaca	ttgaggactt	ggtcaagagc	ggaagcaagc	acaggtgaga	cccctcagtg	55380
aggccacgac	cactgtcctt	ccatggccca	gctctcctgt	gacctgtgga	ggcccgata	55440
tatttcttca	cttttctttg	ttccttttta	aattatgaaa	ctaaccacca	ttcagtacga	55500
aaaagttaa	gcagctctga	ggaagataga	gtaaaaaatt	gtctccctct	ttcctggccc	55560
tcagccatcc	ccggtggcca	ccgtggagtg	tggacggagc	cctgcaggcc	tggtctctgt	55620
cgggaagcacg	cgcagttttg	tctgcacaga	ctgtcctgca	gttggtctgt	ttcactcagc	55680

gttgtgggta	tagcttccca	tgctgggtgct	ggcagctcgg	ccttggttctt	ttgaggacag	55740
cagatgtctc	ctatgtctac	ctcttacagc	ttcagagatt	caagttataa	taaagctctt	55800
cttatattga	gggggaaacc	tccctccccc	ttttttttga	aacaggggtct	cgctctgcta	55860
cccagggtgc	agtgcagtgt	cacagtcttg	gctcactgca	gcctcagcct	cccaggctca	55920
agcgattttc	ccacctcagc	ctcccaagta	gccgggactg	caggcacgca	ccaccatgcc	55980
tggttaattt	ttgtattttt	tgtacagaca	gggtctcact	ctgttgctca	ggccagtcct	56040
ctgagctcga	gagttccacc	tgcccttgcc	tcccaaagtg	ctgggattac	aggcgtgaga	56100
ccccatgcct	ggccagctct	tttttttttt	tttttttttt	ttgagacgga	gtctcgctct	56160
gtcggcccag	ctggagtga	gtggtgcgat	ctcggtcac	tgcaagctcc	gcctcccag	56220
ttcacgcat	tctcctgcct	cagcctcccg	agtactggg	actacaggtg	cccggccacca	56280
cgtctggcta	attttctgta	tttttagtag	agacgggtt	tcaccgtgtt	agccaggatg	56340
gtctcgatct	tctgacctg	tgatccgccc	acctcgccct	cccaaagtgc	tgggattaca	56400
ggagtgaagc	accgcgccc	gcccagctct	gctttttctt	agtggttctg	cgttgtgttt	56460
gtttctatcc	aggaatagg	ttggttttac	ttttccatcg	agtttttaaa	gagacgacga	56520
tttacatggt	cggaaactca	cgaggactcc	ccatcccttg	gtcggaaact	cacatggact	56580
ccccatccct	tggtcagaaa	ctcacgtgga	ctcccataca	tcccaggcag	cagcttccca	56640
cctgggccc	acgtgcagga	tgagggtctc	ttccgggtca	gaagacatgg	cggcctcggg	56700
gcaccgtccc	ctgcatgggg	tgctcacagg	atcttctcct	ctctccttcc	cagggtgtgc	56760
ccttactacc	tgtcccgaa	cctgaagcag	caagccgaca	tcatattcat	gccgtacaat	56820
tacttgttgg	atgccaaagt	gggggctcag	tcctgtagct	gacgactcct	gatgtccagg	56880
ggtgtccctg	ggcttgggaa	cagctgtccg	agcctttgct	gcttcagggc	cttagatcag	56940
caggcctggg	tgggaggact	cacctctgtc	actgggcagg	ggctcaacct	ggccagacac	57000
acttgtgagc	agccccaggc	cacaggctag	ttttctgagc	agtctgggag	cgggcaggct	57060
ggtgggagtg	aggagagacc	tccaggctgt	ggtccatagg	ccagtgcctg	ctcttgatcc	57120
tgacagctca	ggttctctcc	ttcacgtcag	gccatgggag	gcaccgagaa	cacaggaagc	57180
ccactgactc	ccctcttccc	agcgcgtgcc	cggcccccaca	ctactcccc	ctcccagcat	57240
gtgcccggct	tcacactcac	tcccctcttc	ccagtgcata	cccggcccca	cactcactcc	57300
ccccacagca	tgtgcccggc	ctgacactca	ctcccctcct	cccagtgtgt	gccagcccc	57360
actcccttcc	gccccgtgtg	cccagcccca	cgctcactcc	ccccgccagc	atgtgcccgg	57420
ccccacactc	aactccctcc	ctcccagttg	gtgcccggcc	ctgctgccct	cctccccatg	57480
tgccctgctt	ttgtgcccga	cactttttac	ttagtgcagg	tgggatcaca	cgccacgggt	57540
caatggtttg	tgtgttcacg	tgacgatggc	gtggtgacgt	ttccagatcc	cgctgttggt	57600
tcgctcatte	tcggggtgta	tatttattga	gagctcatca	tgctgggtgc	tattccaggc	57660
atagcaagac	tggcttctact	cacatggagc	tttgattcta	gtggtgggga	cagggtggaca	57720
gcaaaagagt	aagcacgtga	gctgacgata	ctgaaggga	atagagcaga	gggaggaggc	57780
ggagaccgag	ccaagcgggc	ccaagtgcga	tgctcggcgg	agggtgggga	tgctggtggg	57840
tctgagggga	gcctcagcag	gtgcagcaga	gcaagggaag	aggtagtggt	gggcggctgg	57900
ggggccgact	cctgggaagc	tgtagcagaa	ccccacagag	agctggtgag	gtttgccgtg	57960
gttgtgggtg	actcgggtgt	ttgagccctg	gctgcccctg	ggaaccatct	ggagagcttc	58020
taacccaacc	aggccctctc	ctgggacagt	tatatcacag	ctggtgaagc	gagtctaaca	58080
ctttcacgga	aacgcagaag	atctaaaaca	gcaagatgac	cgtgaagaag	aacagagctg	58140
gaggactcac	ctcgtgtggt	tcaagactcc	tctaaagtgc	caggagtggg	ggtggagatg	58200
gcccagctca	ggcacaggcc	tgacggccat	ggagaaggca	gcaagctcaa	gctgacccac	58260
acgcatgtgg	tcattgtttt	tttttccagt	tggaatctca	ctctgtcacc	cagggtggag	58320
tgcatgtgca	ccatctcggc	tcactgcagc	ccccgcccct	aggttcttagc	gattctccca	58380
catcagcctc	ccgagttagct	gggattacag	gcgtgcgcca	ccatgcctgg	cccttggtga	58440
ttgttttttg	acaaacatgc	caatttaatt	gagagaggaa	atgaaggttg	atctctggtt	58500
ttctgaaaaa	atggtgctaa	gaacagctgg	atatctgttc	ggaaaacagt	gaatcttaac	58560
tcttgtttta	ccctgtataa	acctaaatgt	aaaagctaaa	ctaaaagtta	tagaaaggaa	58620
catgggggag	gtctttgcaa	ctttggggta	ggcagagatt	tcttagtatg	gatacacaag	58680
gcactagcca	tgaagaaaaa	cattaaaatt	tagacttcac	caaaatttaa	agcttcaact	58740
ctgtggaaga	gttgagaaaa	tgaaaaagca	gttaaagaaa	gggagaaaaa	acttctttca	58800
aaggacttaa	aaaatttttt	cagccctcct	ctgatttgaa	aggacctttg	accagagtat	58860
gtaaaattct	cccataacta	agcaaacac	ccacttaacc	actgggaagg	gatctggaca	58920
gacgtttcac	caagatgggt	ggaatggcca	gttaaccact	gggagagcat	ccggacagac	58980
gtttcgccaa	gatgggtgga	atggccagtt	aaccactggg	agagcatccg	gacagacgtt	59040
tcgccaagat	gggtggaatg	gccagttaac	cactgggaga	gcatccggac	agacgtttcg	59100
ccaagatggg	tggaatggcc	agttaaccc	tgggagagca	tccggacaga	cgtttcgcca	59160
agatgggtgg	aatggccagt	taaccactgg	gagagcatcc	ggacagacgt	ttcgccaaga	59220
tggttggaat	ggccagttaa	ccactgggag	agcatccgga	cagacgtttc	gccaagatgg	59280
gtggaatggc	cagttaacca	ctgggagagc	atccggacag	acgttttcg	aagatgggtg	59340

gaatggccag	ttaaccactg	ggagagcatc	cggacagacg	tttcgccaaag	atgggtggaa	59400
tgccagttta	accactggga	gagcatccgg	acagacgttt	cgccaagatg	ggtggaatgg	59460
ccagttaacc	actgggagag	catccggaca	gacgtttcgc	caagatgggt	ggaatggcca	59520
gttaaccact	gggagagcat	ccggacagac	gtttcaccaa	ggtggatgga	atgaccagtt	59580
gagcacatgg	aaagtcgccc	agcatctcca	gtcataggag	aaggcagatt	aaagccacgg	59640
ggagccgaca	ctgtgggtccc	actggcatgg	ctgaaattca	gaagccctga	gtgtggcatg	59700
aggatgtgga	acagctggat	ctcatccatc	gctgtgaagt	tgtgtagcca	ctccacaaac	59760
gtgtggcaaa	cagccgagcc	gggagaaggg	aagacgtgtt	caaagattca	tatgtggcca	59820
ggctcagtgg	ctcacgcctg	taatcccaga	actttagggg	ccaaggctgg	gggatcgctt	59880
aagcccagga	gtttgagacc	agcctaggca	acataggagg	accccatctc	aaaaaaaaaa	59940
aaaaagaaaa	aagaaaagac	ttcagtgtgc	aggtttacca	gagttttgtt	tgcagttgcc	60000
aaaactggga	agcagcccg	gtgagcccat	ccacaggtga	atggacagac	cgtggtaccc	60060
gaacactaac	agcagccacg	ggcgtggact	gtggtcacac	agcagcaggg	agccgatgag	60120
tctcggacat	gctaaccagg	agaggcccat	tgaggaggac	ctactgtttt	ttgtgttttt	60180
gttttttgtt	ttgaaatgga	gtctcgctct	gtgtgagcag	ctggagtgcg	gtggtgtggt	60240
cttggctcac	tgcagcttcc	gcctcttggg	ttcaaacagt	tctcctgcct	cagccttccg	60300
agtagctggg	actacaggca	cccgccacca	cacccgcta	atttttgtat	tttcagtaga	60360
gacggcagtt	cgccatgttg	gccaggctgg	tcccaaactc	ctgaccttgt	catccactca	60420
ctttggcctc	ccaaagtgtc	gaggttgtag	gcatgaacca	ccgcacccgg	ctggacctac	60480
tgttttatcc	catttatgtg	acactctatt	aatagaaaa	gcaggggtgg	ggctggtggt	60540
tatatggtgc	acataactgc	cagaactcag	tacacttaaa	atgaacatct	taatgtgtga	60600
aatttttttt	tttgagacgg	ggctctgtct	tgtcacccag	gctagagtgc	agtgtgtcga	60660
tctccactca	ctgcaagctc	tgcctcctgg	gttcacgcca	ttctcctgcc	tcagcctccc	60720
gagtagctgg	gactacaggc	gcccggcacc	acgcctggct	aatttttttt	ttttttttgt	60780
attttttagta	gagacggggt	ttcacagtgt	tgcgcaggct	ggtctcgatc	tcctgacctc	60840
gtgatccgcc	tgcctcggcc	tccgaaagt	ctgggcttgc	aggcgtgagc	caccatgccc	60900
ggccaatgtg	tgaaaattta	aaagtaccaa	agctggaccc	caccccgat	tgtctccatg	60960
acactctgtg	ggtgggacct	gggagtgggg	ttttgttttg	ttttgttttg	tttttgagat	61020
gaagtctcac	ctgtctgcct	aggtctggag	gcagtgacac	aatctcggct	cacattaac	61080
tctgcctccc	agatgaaagc	gattctcctg	cctcagcctt	ctgagtagct	gggattacag	61140
gcacacacca	ccacccctg	ctaatttttg	tatttttagt	agagacgggg	ttttaccatg	61200
ttggccaggc	tggctctgaa	ctcctgacct	cgtgatccgc	ccgcctcggc	ctcccaaat	61260
gctgggatta	caggcgtgag	ccaccgcgcc	tggctgggag	ttgggtttgt	aaatctccct	61320
gagtggggct	ggggcagggg	actgctgggt	ctgggtcttc	ctggctcctc	tggctctgtg	61380
cttctgact	gcggtggccg	ggggctccca	gggcatcggt	gccgtctgtc	ttgctgagcg	61440
tggcacgtgc	ctttccatgc	tgtggaggag	cgtctcccg	tatggcgaa	tgctggttag	61500
gggtggggcg	tgttgccagg	tcacccaggt	ctggcctctg	ctctcgacat	cgccggcgct	61560
gttgctcatc	tgcgcttgtg	atgttcgatg	cctgctgcac	atgtcttggc	ttccctcttt	61620
cccggcctct	gtgagctcca	gcgctgcgtc	ccttctcttc	ctcctgtaga	gccgcagagc	61680
acacaacatt	gacctgaagg	ggacagtcgt	gatctttgac	gaagctcaca	acgtggtgag	61740
tctccgctgg	cctccctaac	acctccctatt	gcttctggcc	tttttgtcaa	gagccacgca	61800
aacctttctg	gaggggctct	ggccaaactc	ctgaagccct	aggtgcccag	gactggggag	61860
tgagcacacc	aggagcttct	gccacccctc	cccgcctga	tccgatgcct	ctgctggggc	61920
tggagactgg	ccagctgggc	cagggacctg	cccgctcagg	gcaggggccc	cacaggccgc	61980
tcaccagacc	ctttccctcc	agccagctcg	gggtcagcct	gggccagggc	tgtctcctct	62040
gcccctggca	gcagcaggct	tgtggtcttg	cctgcagtg	ctctgcccct	ccggccacat	62100
ggcttgagac	tgaggcagga	gaatcgcttg	aaccttgagg	gcagaggctg	cagtgagcca	62160
ggatcacacc	actgcattcc	agcctgggtg	acaaagcggg	attctgtgtc	aaaaaaaaaa	62220
atgttgactg	ggcgcgctag	ctcatgccta	taatcccagc	actttgggag	gctgaggtgg	62280
gcggtacacg	aggtcaagag	atcaagacca	tcttgcccaa	catagtga	caccgtctct	62340
actaaaaata	caaaaaaatt	agctggcggt	gggtggcggt	gcctatagtc	ccagctactc	62400
aggaggctga	ggcaggagaa	tactcgaac	ccaggaggta	gaggttgcaa	tgagccaaga	62460
tcacaccact	gtactccagc	ctggtgacag	agcaagactc	cgtctcaaaa	aaaaataaat	62520
caaaaagaat	aattggcaat	tccagtga	taattgtttg	tttgtttgtt	gagacaggg	62580
ctccttctgt	cgtccaggct	ggagtccagt	ggtatgatct	tggccactg	caacctccac	62640
ctcctgggct	caagccatcc	tcccacctca	gcctcccag	tagccgggac	tacaggtgca	62700
caccaccacg	cccggcta	tttggtaatt	ttgttagagg	cgggggtttc	cagcgttgcc	62760
caggctggtc	ttgaacccct	gagctcaagt	gatctgccc	ccttggcctc	ccaaagtgt	62820
gggattacag	gtgtgagcca	ccgcgccgg	cctgaaacaa	tcgtttctaa	atattgggtg	62880
gggccacaca	gtcatgtttg	gacctacttg	tggcctttta	cagaccccag	gccaaaggct	62940
tgggaacttg	gctgtcagcc	tctgtgctct	tctgcacccc	caccccat	ctgctttctg	63000

gaacccccga	tctctgtcctg	ttctgtgggtg	attcgggtgt	gcttgggctc	taggagaaga	63060
tgtgtgaaga	atcgccatcc	tttgacctga	ctccccatga	cctggcttca	ggactggacg	63120
tcatagacca	ggtgctggag	gagcagacca	aggcagcgca	gcagggtgag	ccccaccgg	63180
agttcagcgc	ggactcccc	agcccagggtg	cgttcatagc	cagactgctt	ggtcctgagg	63240
cctgcgctgc	tgagggtga	gccccaccgg	gagttcagca	cggactcccc	cagcccagg	63300
gcgttcatag	ccaggctgct	tggctctgag	gcccgtgcta	ctgcagtggg	cagcctgccc	63360
tgtggctgtg	tgtggctggc	ctgggcacca	tctattcagg	ctggcactgc	agggcatccg	63420
cttctctcag	aggcttcttg	ggtgtgaatt	cttcagggtc	ctgtagcctg	tgggaagggt	63480
ggtattgttc	agtagttctg	gtattttcca	aagacctatg	tcttctccca	gccagtatca	63540
acttggcctc	tactgtgtaa	aactggaaaa	ctctactttg	tgaagctgag	ttgggagcat	63600
cgcttgaggc	caggagtttg	agaccagcct	gggcaacatg	gcggaacctc	gccccctcca	63660
aaaaattagc	caggtgtggt	ggtgtgtctc	tgtgtgtccaa	gcttttcttg	aggccgaagt	63720
gggaggcgtg	cttgagcctg	ggaggcagag	cttccgggtg	cccagatgac	tccactgcac	63780
tccagcctgg	gcggcagagt	gaggccatct	caaaaaaaaa	aaaaaggaaa	actaaatata	63840
ttcactgtaa	gggcattttg	catcttttaa	tgaccacaaa	atctggcatg	catcagctgc	63900
tctgcctgta	ggttctctcc	cagtgtttgt	ccagagggtg	atttccacac	agcgctagtc	63960
acggcatatg	tggaaaacgt	ggaaaccttt	catggatgtt	gtcagttggg	ctatattttc	64020
tttctttttt	ttttttttga	gatggagttt	cacttttgtt	gcccaggctg	gagtgcaatg	64080
gcgcgatctt	ggctcactgc	aacctccgcc	tcctgggttc	aagcaattct	cctgcctcag	64140
cctcccaagt	agctggggtc	acaggcgtgc	accaccacgc	ccagctaatt	ttgtattttt	64200
agtagagatg	gtttctccgt	gttggccagg	ctggtctcga	actcctgacc	tcacgtgatc	64260
caccgccttc	ggcctcccaa	agtgtctggg	ttacaggcgt	gagccgccac	gcccggcctt	64320
tgtccatatt	ttctacatgg	cttctgtaaa	cagctgacta	ggagtctgtg	tgaatatctt	64380
cataggttct	gctgtgacac	tacttgctcg	tgagcatctc	cagggtgtaa	cagcatcagc	64440
ttccccatt	ttcttttaa	atcgacatg	tggacggaca	ccacggggac	cctggacctt	64500
ggggagcccc	gtcctcacc	ttctcaccag	gatggctgct	tggtagagag	tgagtttgca	64560
aagttggcat	ttgttttagta	cagaagttat	cagggtgtct	ggcttttagaa	tccctttata	64620
tatatatata	tatacatata	tttaagtgc	agggctctac	tctgttgccc	aggctggaat	64680
gtgggtgtac	aatcaaagtt	cctctgagcc	tcggcctcct	gggctcatgg	gatcttcccg	64740
tctcagcgtc	ttaaagcgcc	gggaccacag	gtgtgcacca	ctgccaccgg	ctctcaagat	64800
tgccacgcag	ggagtgtcag	tgggggaagg	ggttctctgg	actttgaacg	ctccacctcc	64860
ctcctctcca	cagtccccca	acccccacct	tctaacgggg	tggacggccg	cctctttcca	64920
tccttctgct	ggcgagggtt	ggggagagtg	acaggctctc	ttccctcatc	tcggcagctg	64980
ccatttcatc	gcttacataa	cgtgggagaa	acatccaccc	acccccaggc	ctgtgtgaac	65040
atcaccacgg	ggccttctcc	actcttcagt	tttgttagtt	acttgatgtg	cagggttttt	65100
tgttgtaact	agtgggggac	gtgtgggtgg	gtggcctctc	gccatctcat	tcaggaccag	65160
aaacttcagtt	ttcatcccta	tctgttcccc	cacccttttg	gagatggggt	ctcactctgt	65220
caccacaggct	ggagagcggt	ggtgccatca	cggctcactg	cagcctccac	ctcctgcagc	65280
ctccacctct	tgggctcaag	tgatcctcct	gcctcggcct	cccaagctcc	tgggactaca	65340
ggcgtgtgcc	actgtgcttg	gcagggtcca	ttcttttctc	cacactttat	ttattgaaga	65400
gcccaggccg	tttaccctgc	agagtcggaa	tctgtacagg	aggggcagcc	acacgagttc	65460
cccggtttac	tctgaactta	ggtggccttg	gggcccaggt	tagactgcgg	ccaccgtttg	65520
ccgggtctca	gatgggacgt	ccttctctac	agaaggctca	cagtatctcc	tttcccgttt	65580
cttcccatgt	gaacattgtt	gctgctgaac	acctgaatat	gttaatcact	gggggcttgc	65640
aagatggcag	tgtgctaatt	ccatcatcta	gtcagtttag	aggaataact	taggaccacg	65700
ccctgcacca	tatcagctat	gtggtgatcc	cattcacaca	ggaaagggtg	gacaaatgct	65760
gggggtgggc	cgggtgtgct	gtctcacacc	tgctcatcca	gcactttggg	aggcccaggc	65820
aggcggatca	cgaggtcaga	gattgagacc	atcctggcca	acacggtgaa	accccgctct	65880
tactaaaaat	acaaaaaaat	tagccagggtg	tgggtggtga	tgcttgtaat	cccagctact	65940
tgggaggctg	aggcaggaga	atcacttgaa	cccaggaggc	ggaggttgca	gtgagccgag	66000
atcgaccat	tgcaactccag	cctggcaaca	gagcgagact	ccgtctcaaa	aatcaatcag	66060
tcaatcaagt	gtcatcactg	aatgtttgtg	tgtgaacgtg	gggattgggtc	ctgccccatg	66120
ctccctctctg	aatctcactc	ctgacctcag	ttgctgcacc	ttgaggtgtt	ttctgtgggc	66180
tcttgtgtcc	tgaccccggc	ggttgtggcc	tctgtgtctt	gggagtcagg	atttttcaca	66240
ctcatgtcct	gctccagacc	tggaaatcagc	caagtctcca	agaagccctg	ctttcttttc	66300
ctgcaagacg	gtattttcaag	acccgccgtg	cggcagcggg	ttggtcatgg	ttactgggtt	66360
ggtcgttgtg	actgggtgtt	ttcgtggaga	tacagccata	cgcacaggtg	tgctcacaaa	66420
ttgtaattct	aaaggtcaaa	cacccgccca	ggcataaggg	ctcagcggta	atcccagcac	66480
tttgggagac	caagactggt	ggatcacctg	aggtcaggag	tttaagacca	gcctgagcaa	66540
cagggtgaaa	ccccatctct	actaaaaaat	cgaaaattag	ccgggcatgg	tggcgcacac	66600
ctatagtccc	agctagtcgg	gagacagaca	cgagaattgc	ttgaacctgg	gacatggagg	66660



ttgcagtgcg	cagagatggc	gctgctgcac	ccctgcctgg	gtgacagagt	gacacccctgt	66720
ctcaaaaatg	aatagataaa	taaaagataaa	acacctgctc	ctcttggtgt	ctccagtttg	66780
gattttggcct	gtgtagcctc	ttcttccgcc	tggttggtgga	tttggcctgc	acggattctg	66840
tgtggcctct	tccttccccc	gttggtggat	ttggcctgca	cggattctgt	gtggcctctt	66900
ccttcccctg	ttggtggatt	tggcctgcac	ggattctgtg	tggcctcttc	cttcccctgt	66960
tggtggattt	ggcctgcacg	gattctgtgt	ggcctcttcc	ttcccctgtt	ggtggatttg	67020
gcctgcacgg	attctgtgtg	gcctcttcc	tcccctgttg	gtggatttg	cctgcacgga	67080
ttctgtgtgg	cctcttccct	cccatgttgg	tggatttggc	ctgcatggat	tctgtgtggc	67140
ctcttccctt	ccatgttgg	gtccttcttt	ccatgccagg	aatcctggtt	ctcaaggcg	67200
gggttggttg	cacgagcgtg	atgcagactg	cctttgctgc	ctttctcttg	cccagggtg	67260
aacatggagc	tggaagacat	tgcaaagctg	aagagtaagt	gttgccctcc	ccgcctcctt	67320
gcagctgggt	ggggcctcct	ccttgcgagg	aggtgggtga	cacctcctcg	acccacagtg	67380
atcctgctgc	gcctggagg	ggccatcgat	gctgttgagc	tgccctggaga	cgacagcggt	67440
gtcaccaagc	cagggagggtg	agaggcgggg	agccagcccc	ttcactgcag	gcccagccta	67500
gagctagaaa	cgggccatgg	tgagctcctg	ggctgtcaca	tcacgagtga	ggcctgtttt	67560
caggcctggt	ttcccctttt	gagacctggg	aggagcacct	gctttgcatg	atctggttgc	67620
tgagatggtg	agaggagcag	cacacactcc	cacgggacag	cacacagccc	cccacggaac	67680
ggcacacaca	cccattggaac	agcacacaca	ctcccacgaa	cagcacacac	actcccacga	67740
acagcacaca	cactcccacg	gaacagcaca	cacacccacg	gaacggcaca	cacacccacg	67800
gaacagcaca	cacactccca	cggaaacagca	cacacaccca	cggaaacggca	cacactccca	67860
cggaaacagca	cactctccca	cggaaacagca	cactctccca	cggaaacagca	cacacactcc	67920
cacggaacag	cacacacacc	cacggaacgg	cacacactcc	cacggaacag	cagactctcc	67980
caccggaacag	cacacacact	cccacagaca	gcacacacac	acccacggaa	cagcacactc	68040
tcccacgcgg	ggcgcctggg	tttccctgcag	tttctcctcc	tccaggcctt	tccctggacc	68100
ctggctcagt	ccgtcatttg	agcacagggtg	cctgttagaa	cgagaccttc	ttgttaggac	68160
gatgagtgtc	ccagccacca	cctcttttgg	actccgggag	gcctggaaacg	ttctgaacgc	68220
tccgtggggc	tccagtcttc	tccgcagcca	gggcagcagg	gtttgctgtc	tgctctgcag	68280
gcagatgagg	agtcagggtc	ggggcctgtg	tgggggctct	cctgagcgcg	cagccgcgga	68340
ggtggagcgt	gttctgcctg	agcgccgacc	tggtcggggg	aatcccagtt	gcttccaggt	68400
ggagccactg	tcctcagcgt	aatgtctcaag	gctctggcct	ggctcctcgg	ccacctgca	68460
ccctcagggt	ccctcctgt	agcttctgct	gcccctcac	tgctactctc	caaagctttg	68520
gggactctgc	ccagagccac	cgctctccag	aagcccctga	caacctcttg	acgacccctt	68580
agtgacccca	tcctctccct	ctgacggcgg	cccctgctct	gaggcggtt	cttttccctg	68640
gtgctgttct	cgtgtggcc	aggcctcctc	tcccacctg	gaggctcctg	agggcgagg	68700
cctctcacct	ccaatgctgg	cgctccctgg	agggctgaat	ttgtttccga	gggaaggaaa	68760
cttccacagt	tgttgccctc	agttccaaag	ctgcagcctg	atttccccc	ccaggctcga	68820
gcctgttttc	ttctcggcag	ctacatcttt	gaccagtgtc	gtccccctc	aggcccagc	68880
ctgccttctt	ctcctcagtt	cccaaagctg	cagtctggtc	cccccgccag	gctcagacct	68940
gccttcttct	cctcggcagc	tacatctttg	agctgtttgc	tgaagcccag	atcacgtttc	69000
agaccaaggg	ctgcatectg	gactcgtctg	accagatcat	ccagcacctg	gcaggacgtg	69060
agtgtctggca	cggggtcttt	ggtgcgggca	aatgtggcgt	agggggtgca	gcaggcctcc	69120
atcttggcag	tcagggtctc	cctggccgtc	acctggccgt	cagcaggaac	aggcccacag	69180
aacctcatct	tctgatcggg	gcgtggaggc	gttagtgcca	cttgccagct	gccgtagagc	69240
ctgtcccagt	ttgcagctg	cgggtctcgt	cctacagcct	catcccatta	ttctgctttt	69300
gagaaaagagc	agcccaaggc	cctagctggc	ttgtggggcc	tctggcttct	ccacaccacc	69360
ccgagttctg	cttctcagag	ttgtggggct	cagaggcttt	gcccagaggc	ggtgtcccca	69420
tgggctgtct	tggtttgaga	cgccggggcc	agcggggctc	ctcctctgct	gcgtcccg	69480
gtgctgggga	gggtggcttt	tgctgcttca	accttaggc	gaccatagag	cctcttttca	69540
agtcccactg	accccttgg	agactctgtc	cctgctggc	ttctctcctg	gctgtggga	69600
agagcaggcg	aactgcccgc	cctgaatgga	tgctgcgtc	cacctgggc	ccccattgg	69660
gcaggagatg	gagcttggca	gtcgggctga	gcgggctcat	gctggaaagg	ccggggctgg	69720
ggtcggggcc	tcccctgcct	gcagtgtggg	tgctcagcgc	ctgctgccct	ccagggtgtg	69780
gagtggtcac	caacacggcc	ggactgcaga	agctggcgga	cattatccag	gtggggcctg	69840
ctcctctgtg	gcattctcct	ccctgatgga	agccggggcg	gtgccttctc	ctgctgtatt	69900
agttaactga	ttctagactt	ggggatggga	gaaaggcccc	tacaccacct	gtttctgatt	69960
ggcaaaactct	cggctccttt	ccagtgcctt	aaaccacac	tgggcctcct	gcagggatgg	70020
gggaggacga	ggtctgggtg	cacatgcccc	gggtgatgct	ggtgaggag	gacgcaaagg	70080
acagtggggg	ccggggagcc	gctcctgccc	tgctcgggcc	ctcaggccag	gggggaccca	70140
ctgctgggac	ccccagcagc	cccagctgca	cgcagatgaa	gagctctgga	cacacgcggc	70200
ttcctgaaca	gcttctccag	ggacagacaa	atggggaccc	tgaggttcc	cggcaggggg	70260
gtccctggga	gcccattgatt	gggggtgcga	ccctggcccc	cttctcattg	gcccgcctct	70320



gtcctgcaat	gcccgtccca	tgtgaggtct	gcttctggct	ccatgcctat	ggcagcacct	70380
gctttccctg	gcgtagaggt	gcttgtccgg	tttgtggagg	gcacgccccca	ttttgggtgc	70440
tctgggcacg	ttgcctctcc	ggggcctcgg	tggtcttttt	agaagcagac	tcagaagtcc	70500
ctgactgggg	aagccaaggc	acaggtggct	gtgtggagcc	ctgtgaggcc	tcctctgtgc	70560
tgcccacgct	gtacctgctg	gccacacgag	atcatggcag	ggttaggcag	ggctgcccag	70620
cgctatgaca	gcttcatgag	tgtccatctg	gectgtgggg	tgcttgagct	gggggaggcc	70680
gcagaagaac	cctgggatgc	atggctggcc	tgtgcatgct	gctgggcatg	gagctgcaga	70740
tcccgggaaca	agcaggcact	gccttctcct	tcacagacgc	agctctgagc	gggggcgaga	70800
cctgggcagg	gaccagggtg	gggtgggcaca	gggtgggtggg	gcccaggctc	agccctccct	70860
ccactgtggc	cgctctgtgt	gccagtgcag	ccacagcctg	tgtcttctct	gtgcggtagc	70920
tggggctgga	aggacagcac	tgcttgttcc	tcccaactcc	tcccaaaagg	cacggtgggc	70980
atcccaggcc	cagaccctc	tgtctgtggc	tcctgcctgc	caagggtctg	tgtgctgtcc	71040
cgcatggagt	gtggttggct	cttcaagcag	gaggccgtgc	acctatcagg	cggacctgct	71100
tccatgtccc	tgatgggtca	ctgcaaagca	cctccagcac	atggccaggc	gaggtagccc	71160
tgcagcccag	ggcctggagg	gcaggtgtga	gctggcccgg	gcctgtccct	ccctggaata	71220
cagcttccca	ggctcccact	tatggagaag	tctctccac	actatggaac	tgaatcctag	71280
aatgtggctt	ctgaggttcc	tacactcgaa	ctgaatcctg	gaatgcccgt	tccaaggctt	71340
ccagctatgg	agaagactcc	acactctgga	accgaatcct	ggaacgcggc	ctcccaggcc	71400
cccagctatg	gagaagactc	cacactctgg	aaccgaatcc	tggaaacgcg	cctcccaggc	71460
ccccagctat	ggagaagact	ccacactctg	gaaccggatc	ctggaacgcg	gcctcccage	71520
ctcccactta	aggagaagtc	tccacactct	ggaaccggat	cctggaacgt	ggcctcccag	71580
gccccactt	aaggagaaga	ctccacactc	tggaaaccgaa	tccctgcacac	tccatcgggt	71640
tggaatttcc	tttggctgct	gctctaagta	gccgctgggtg	gatgactcag	cttctgccag	71700
ccctcgggtg	cctggaggat	gagggactgc	acacagtgtc	caccgcgctt	ggctcctgag	71760
ccccctgcagg	tgtggggcgt	gcccataggg	ctggtgtctg	gttgggcctg	cagccctgag	71820
tcacaggtga	ccctgggggc	agagtggggc	cagtggcccc	aggaagagga	tgtgggatgc	71880
acagctcagc	tggaggcgaa	ctccaggcag	ggtcaggccg	tgtgctcgga	agtcagggct	71940
tagctggagg	caaactctgg	gcagtgtctg	cccgtgttgg	ggaaccagtt	gccccggggc	72000
ccccgtgaga	ctgctgggtc	ctcatccctc	tctgcctgag	gcccggagctg	ccctgggctg	72060
aggcacaagg	ggatttgtgg	tgggtgtttt	ttgagaaagg	gtctcgcttt	gtcaccctcg	72120
ctggagtgca	ggggcttgat	cacagctcac	tgcagcctca	acctcctggg	cccaagtgat	72180
cctcttgcct	cagccacccg	aggagctgtg	aacacaggtg	tgcaccaccg	cactcagcta	72240
atttttaaaa	tttttttgta	gagatgaggt	cttgccatgt	ttcccaggct	ggtctcaaac	72300
tcctgggctc	aggcagctct	cccgccttgg	cctcccaaag	tgctgggatt	acaggcaaga	72360
gcttccatgc	ctgcccagca	gaaggctttt	cgaaggaaag	tgtttccctga	ggcagactca	72420
gcccctgtca	tggcagccac	cagcgtgggg	gtgaacctgt	tctgttactt	ccatccccgt	72480
gggccaatag	cttttgtaaa	acacaaggcc	ctgtgttttag	ctgtcttgac	agtgaataatg	72540
gctgggaagg	aagggaaggaa	cggaaggaaa	tttctctctc	cttctgtgcg	taccaggcca	72600
cgtagcacatg	catgcagagt	acgcacacac	gcacgcacgc	ctgcacaaat	ccacgcagtg	72660
tgccaagtct	ctgtgttcca	gccgtgggtg	ctgccccccg	gtgttctcta	gttcggcttc	72720
tcgcgatttc	tgtgaatgat	tccggtctct	tgggtgttccc	agcagaactc	cctcaagtct	72780
gcgggcgggc	tctgacggcg	gtggcttggc	tgacatggcc	acattgctga	gcctgttggg	72840
ggctttgctg	tectgttctg	gccgtttttg	gctcgttttc	caggaaacgg	cgtcacgcgc	72900
tcctctccta	gtgcaggcat	cattcccttc	ccattgattt	gcagggttct	ctgtaagttc	72960
tgaggatccc	atatacatat	actctctgta	agttctgagg	atcccatata	catattctct	73020
ctctaagtcc	tgaggatccc	atatacatat	tctctctcta	agttctgagg	atcccatgcc	73080
gacatacata	ttctttccct	gtctcatgct	ggctcatttt	tccattttca	tgacagggtt	73140
ggtgaacaca	tgtttccctg	tcagattttt	gttctgagct	tgtgctccc	gaccaagatg	73200
ctaaaccggg	tcttgtgtat	tctccaaact	gcactgtaga	gtgacggagc	tttgtgtctg	73260
ggcctccatg	ccttctgacg	tcacctgtgg	gggtgtgaaa	ggcagactct	accttgattt	73320
ttcccagcac	gccacaccg	tgggtctgtg	cgctgaccga	gcggtcggc	ttcccccaac	73380
tccactgggc	acctgccaca	cttttctcta	tgtttttgtt	cactgtggtt	ttgtcgtaag	73440
tccctgggtt	ggcctgaacc	aatttctttt	tgtttgtttt	tgagacagag	ttttgtctt	73500
gttgcccagg	ctggagtga	gtggcgcgat	ctcggtcac	tgcaagctcc	gcctcccggg	73560
ttcacgccat	tctcctgcct	cagcctccca	aataacctgg	attataggca	cctgccacca	73620
cgccctggcta	attttttgta	tttttagtag	agacgaggtt	tcaccgtgtt	agccaggatg	73680
gtctcgatct	cctgacctcg	tgatccgcct	cccaaagtgc	tgggattaca	ggcatgagcc	73740
accgtgcccc	gcctgatatt	tttagtagaa	tgggggtttt	gccatgttgg	ccaggctggt	73800
ctcgaactcc	tgacctcagg	tgatcctctc	accttggcct	cccagagtgc	tgggattacg	73860
gggtgtgagc	accacgccc	gcctcttgtt	cttttgaaac	ctgccctgac	gttttttcca	73920
tagtgcactc	tggagtcagc	gtgtctactt	cctgtaaaaa	tcttactgtg	attttgacta	73980

gaatgtgttg	aattcctgtt	ttttttttga	gtcaggggtc	ctctgttgcc	caggctggag	74040
tgcagtggga	ccatcacagc	tactgcagc	ctcaacctcc	tgggctcagg	ggatcctctc	74100
agctcaacct	cccaagtagc	tgggaccaca	ggcacatgcc	accatgcccg	gctaggtttt	74160
tttttttttt	tttttggtag	acaccctggg	gttgaccat	gttgcccagg	ctggtctcga	74220
actcctgggt	tcgggcagtt	tgtcctctc	agcctcccgg	agtgtcggga	ttacaggcct	74280
gagccactgc	actaggccat	gttgaatttc	tagattaatt	tggggccctc	aggggcacag	74340
agaggagggc	tgggccagtt	ggcgggagga	gaggccctc	gggctgccgc	attttcagt	74400
catggagatg	gcctatgttg	ggggaacaca	gagctcaccg	gggttccctg	cagggaggag	74460
aaagggtcag	gcaggtgcc	gtcctgtcc	attggcctgg	ggctgcatga	tggcaggggc	74520
cgggtgaaccg	atgacctctg	ggtgtcctgt	gacctctctg	gtatgcggct	gatgctgcag	74580
aaagtccgggt	ggcctcaggc	tcctgacggg	gctgcacttc	ctctgccttt	cagattgtgt	74640
tcagtgtgga	ccctcccgag	ggcagccctg	gttccccagc	agggctgggg	gccttacagt	74700
cctataaggt	aggggccacc	tccaggaggc	aggtggaggg	cagcccttgt	tccccggcag	74760
ggctgggggc	cttacagtcc	tataaggtgg	ggggcacctc	caggaggcag	gtggggctgg	74820
gggtctttctg	gtcctaaaag	gtaaggggct	gccccagga	catgggcggg	gcctccacac	74880
tcctgggtcct	gtccccctcca	ggtgcacatc	catcctgatg	ctggtcaccg	gaggacggct	74940
cagcgggtctg	atgcctggag	caccactgca	gccagaaagc	gaggtacaga	cctggggcca	75000
cacgtctccc	gcccccccg	gtgcagtgcc	cggcaccacc	atgccacagg	ctaggcacat	75060
gcccagccgt	ggatctcctg	cccccatggg	cctggccacc	ttctccatat	ccaggccaat	75120
ccagagcatt	ctcctcactg	tccctctgaa	gattggagtt	actgagagac	gtaggagatg	75180
gcctgatggc	accgtgacct	gcccagagtc	acctgggttg	tgggtggcaga	gccacagccc	75240
agccaggcct	ccctgctggg	acacgctcgt	ttatgccgag	gccgtcagca	cagagcctcc	75300
acagtggaggc	acggctctgc	ctgctgcctc	cacgcagcgc	ctggccgggc	caagcctcag	75360
ggtcacatct	gaagggggcc	cggctggccc	tgttgtccga	agccctgggt	gcgtcagcc	75420
ccgaggcccc	acgtgccttc	ttggcttcc	gtgtccctg	gcgtcttcga	gtcgggtgctg	75480
ccggggacgc	tgtgtggatg	gggtctgtga	gtgtgccctc	ggctccgtgt	ccggagccct	75540
gtggttcttg	gggtgtatct	ggccccacc	ccactgcgtg	gtgtccaggg	tggggcttca	75600
cggctgcagc	tgcgggagct	gctgccccctg	ccttgtgtctc	cagtggggcc	ttgcctctgg	75660
gcttggttctg	tccctctctg	gaacattctt	tctcagctgc	tgtccgacct	atggtggcat	75720
gacgtggccc	tggctgaâgc	agcccttgtg	cggttgtctg	ggttgggtct	gcctggccga	75780
gccggaagg	aagggtctgg	agggcgctcag	ggtggcgctg	cttgaccccc	gctcggtgat	75840
ggtcctgcag	caaggcctct	cccagcagga	agcgtccatc	ccggggggag	gccggcgccc	75900
ctcacgcagt	tggggttgcg	ggaggcagtg	cgtgcctgag	gcagccggtg	cacagattcc	75960
aagggccttg	aatctgtttg	ttccattgac	ctctgatgtc	acttgacttc	tcagaagcag	76020
ccactccctg	cactggggct	ttgtaggaaa	tgagctcctg	gaggaggggg	tggggaagtt	76080
ccccatttgc	agggcacact	cagccccagg	aaggaaacgt	gcctcgtccc	tgtgactcc	76140
gaatcgcagt	cagagtcgtt	ctgcttgtgc	cgtgttgaat	ttccggcatc	cggcatccag	76200
actcagcctc	ctccccaggc	cacggccgccc	gtggccagtc	ggtcaagccc	ttctaggaac	76260
ttccttttag	ctggcgccct	tgttcaactgc	tgacgccact	cagaggcttg	tgacagtgtc	76320
ctgcttccag	gcagagctgg	gaactcgcac	cccgtcttct	gcacgcggcc	gtggaatgtc	76380
gggatgcccg	cgcttccctc	ccgtgtgctc	ttggcggggg	gggcttcttg	ccctgagccg	76440
catgtcacag	tttctgcaga	agtttagggg	tggagtgggc	tgacctctct	gcaggtgtcc	76500
ccagcctctg	cctggggtct	gcctcctact	cccaggacct	cctgtcccc	agagggggcc	76560
caagctggca	ggctcacact	cagggcagcc	tcctttgttc	tgacttctgc	acagtgggcc	76620
tgggtggctg	cccgccgctc	gcttgcttga	tgccagtggg	tggagagggt	gatgggcaga	76680
gaggcagggtg	gtcaggcccc	cagtcccgtc	ctcacactct	gtgccctctg	ccgccccccg	76740
ccccacagg	aagggtgctga	gctactgggtg	cttcagtcctc	ggccacagca	tgacagagct	76800
ggtccgcccag	ggcgtccgct	ccctcactct	taccagcggc	acgctggccc	cgggtgtcctc	76860
ctttgtctctg	gagatgcaga	tgtacggggc	accctgcca	gggcctgagc	accggtgaca	76920
cctctgacat	cagcgggggtg	gaagtgggtg	gggtcccat	gagccgggtg	ctgggggtct	76980
cgggcctcga	gggctaaagg	ggtgctgggtg	cacttcccca	ctgtctgctc	cctctggcca	77040
cgctcagccc	tttcccagtc	tgcctggaga	accacacat	catcgacaag	caccagatct	77100
gggtgggggt	cgtccccaga	ggccccgatg	gagcccagtt	gagctcccg	tttgacagac	77160
ggtgagggcc	tgtccctggg	ccctgttggg	gtgggagggtg	ggggagcact	gaggcctgag	77220
gcccgtgagca	gtggcctctc	cggctctagg	ttttccgagg	agtgtctatc	ctccctgggg	77280
aaggctcttg	gtgagtgcct	tgaatgcccc	agctgtgcgc	atcctggatc	ctggacccct	77340
gtcccaaga	gctggtaggg	accctgcag	acatctgcc	cctgccttga	ccccggcccc	77400
tgcacttcca	ggcaacatcg	cccgctgggt	gcctatggg	ctcctgatct	tttcccttc	77460
ctatcctgtc	atggagaaga	gcctggagtt	ctggcgggtg	cgtctcccct	gtgttctggg	77520
cggggtgggt	gagggcaggg	ctggagcatg	aagcaggcag	tggtcacagc	tcctgttgc	77580
cctcatcgga	tcggcgccgt	gaccagggtc	gccgtgtccc	tgcctcttcc	ttccacaggc	77640

ccgcgacttg	gccaggaaga	tggaggcgct	gaagccgctg	tttgtggagc	ccaggagcaa	77700
aggcagcttc	tccaggtctg	gcacttggcc	ggggctcttg	gcctgctgcc	ccctcgtgcc	77760
tcccctgcct	ctcacagctt	ccccaaaggct	gaccactggc	cctgaccatg	ggctccggcg	77820
gctcccgcctg	cctcttcagg	gctcctgcgt	ttccttcctg	gccctgagtg	ttgcctctta	77880
tcttacaaag	ccccagcac	cgggtgggtg	tggtaacagt	ggccctcctg	tctgagtagc	77940
cctagtcggc	caccctggcc	ctgggggttcc	ccgtgttttc	tggaagcac	tgagcaggcg	78000
tggggtcagc	ctgggatccg	tgccaggaag	aagcttccag	aacccgattg	gccttcctgg	78060
ctaggacgat	ccttcacatctt	ggagcatgag	acctgggtct	ccctcatggg	ggaggaaggg	78120
gctggggggg	ggctccaggc	tcagcctcac	caactttcct	tccagaccat	cagtgtctac	78180
tatgcaaggg	ttgccgcccc	tgggtccacc	ggcgccacct	tcctggcggt	ctgccggggc	78240
aagggtgagct	ctccagggcc	ctctgcccgt	acctgggtgc	ctgttccctg	gtgggtgctt	78300
atggctcccc	agcagactct	gggccctggg	ggctgcccgg	tcccctcctt	gggtcccacg	78360
agagcgactg	ctggccctgc	tgggagcgtg	tcctgtctctg	ggcctgggca	ggcaggatgg	78420
gagtttctctg	gccacaagag	ttggagggtg	cgtctgggag	ctgtggacc	caagtggggg	78480
cctgaccac	agatggagct	tcctcccacc	cctgggttggg	gacggagcct	cgggggaagg	78540
ggctgggctg	gggtgtggga	ccagggagag	gagccccac	ggccccaggc	agctccctgg	78600
tgtgtccctt	aggccagcga	ggggctggac	ttctcagaca	cgaatggccg	tggtgtgatt	78660
gtcagggg	tcccgtaccc	cccacgcag	gacccccggg	ttgtcctcaa	gatgcagttc	78720
ctggatgaga	tgaaggccca	gggtggggct	gggggcccagg	tgagttacag	cagggtgggg	78780
ctggggtaag	gcggtctggt	gactgagccc	ccgccccgtg	gccaagggag	cccccgtagc	78840
cgagccgctt	cgccccacag	ttcctctctg	ggcaggagtg	gtaccggcag	caggcgctcca	78900
gggtctgtga	ccaggccatc	gggcgagtg	tcgggcaccg	ccaggactac	ggagctgtct	78960
tcctctgtga	ccacagggtc	gtgcagtcg	gtggcaggcg	cggcgccagg	ggacacgccc	79020
acacccact	gggccccctg	actctccttc	cccacatgag	gccccgtctc	ctccagagcc	79080
tctccggcta	ctcggggtca	gcgtggggcc	cctgcagcag	atgagggtct	tcacttcggg	79140
gaactgaacc	cttgaagcgg	ctgtgggcag	ggcagcaggg	ctatggccac	cccccagggt	79200
cgcttttgcc	gacgcaagag	cccaactgcc	ctcctgggtg	cgccccacg	tcagggtgta	79260
tgacaacttt	ggccatgtca	tccgagacgt	ggcccagttc	ttccgtgttg	ccgagcgaa	79320
tgtgagttcc	tgccagggga	ggggatgag	gtgttgtccc	cagaggagcc	agaaatgggt	79380
ccaccacccc	ccatggttct	gcagatgcc	gcgcggcccc	ccgggctac	agcaccaggt	79440
gtgcgtggag	aagatgtgt	cagcgaggcc	aagtgcctg	gccccctctt	ctccaccagg	79500
aaagctaaga	gtctggacct	gcagtgtccc	agcctgaagc	agaggtcctc	aggtgcggac	79560
gggcagcgct	gggtgggcgg	tgtgggggtg	gcggagcggg	cggcggtggg	cgggcagcac	79620
caggcgccca	gggcggaggc	gactcacctg	gctttgtgcg	cttcccctcc	cacctccaaa	79680
ggctgcctct	ccctcctagg	gcagggcccc	cacgggctgc	aaccttcccc	tacaggcaga	79740
gaacgcccc	ggcaaggatg	cccccgagg	ctgagactcc	ccccaatagc	agggaggaca	79800
cccacaggca	ggaccccaag	tgctgggact	ctcccccaag	aggggctttg	ccacaggcag	79860
ggacccccagc	tggggccccc	cgtgggcttc	actgcgcact	cgggtgcccc	tgcagggtca	79920
ccagctgccc	gggaccccca	gagtagcctg	tgtgtggagt	atgagcagga	gccagttcct	79980
gccccgcaga	ggcccagggg	gctgtggcc	gccttgagc	acagcgaaca	gcgggcgggg	80040
agccctggcg	aggagcagg	acagtccag	ggccttgga	tgacacaga	ccctctgtct	80100
cctgaggcca	acccgacccc	gcccactctg	cctcaggcac	ctccccacac	acccctgtaa	80160
atccctctgc	tggcaggcag	gcgggcaagc	ggcggggga	tcccagctgc	ctggctgtct	80220
gtgggtcctc	caccccacct	cacccacagg	ctgctggctc	ccagggtggtg	catgccctgg	80280
ccctccggcg	gtgcccccca	catcactttg	gttctctggc	gggtcagctt	ggctcagtcg	80340
actcaaggtc	gggtgcccct	gccactggct	gcgcttgagg	ctggcctttc	tccaggaatg	80400
tgctgcgggt	ggaacccagg	ttccttcttc	cttggggcct	tttgccccag	aagcccataa	80460
ttcctcaggc	caaccgaaa	ttttctccct	gcttccctgt	gggagccatt	ccctcttcc	80520
tgcccatccc	tgcccttcag	gcccctggag	tgagctccag	gtgcaggcac	caggcacctg	80580
tgtccctctc	ctgccagccc	ctcgctgtgg	tcggactgtc	ttccctggac	ctgctcttac	80640
aagtcaaccac	ctgcgagcct	catgagccgc	tggtgtgact	tggacaggac	caagtgtggt	80700
cactgtcacc	ggggtgtgct	gtgccccctt	cccccgacct	ccatcttggc	tcagggtctc	80760
ttgggaccat	cttccctgtg	cgtccagggtg	ctttgggacc	ccagagtgtg	tggttggggg	80820
ctgtgtgtgg	ttgtgagctg	tgccctcctc	aggccacag	ctgctccacc	ctgtccctcc	80880
tgtctgagaa	gaggccggca	gaagaaccgc	gaggaggggag	gaagaagatc	cggctgggtca	80940
gccaccgggt	gcgtgagctg	tccctgcacc	tgtgccgacc	accatagaca	cgcatgggaa	81000
gcgagccgtg	ggtgccccca	gccacggctg	gtcccagatg	gaccagggaa	tccaccccc	81060
ggagctgatg	tccagggcag	ctgtgatgct	gacggccagg	ggctcaagtg	tgtgggtttct	81120
tctgcagggg	gctcatgagt	cccagctgga	atcaggcccc	acccttgggc	aggtttggca	81180
tggggcctgc	agcactgggc	ttggccctgg	catttccctc	aagtgtggat	gcacacctgc	81240
ctcatgtgag	ggacacagcc	cattccttagc	cttgatcaa	agaacggagt	tatagccgga	81300

gcccaggaagc	cccctgcctg	ctggaaaacc	ccaagtgtgg	cggcctttgt	ccatgtccct	81360
tggcttctgg	gaagaactgg	gtggtgcccc	ggcagggtcg	gtgccatcag	gaagtgggtg	81420
gctgctgagg	ggcctgggct	ggcgaggggc	tgggtgggga	gtgcctgggc	cgccctgcc	81480
ttggtttcca	cgtttccgtg	ttggtctggg	gtgtgtagag	agatgggcac	tgctcatccg	81540
gaagcccttc	cttgtgcgct	gccatcctgg	gagcctcagc	cgcatccgct	gtggggcagg	81600
gggcttgagg	gaggaggaga	gagacggggc	atgcaggacc	cctggcttga	ggcagagcca	81660
atctaccctt	tgccattca	ctgctctcag	ttccctgcc	gcctctcact	gtgtgacctc	81720
agacggggcc	agccccacag	ctttcttccc	gcagcccttc	cctatgtcca	tccagccagc	81780
cagtttctca	ggcagcagcc	ccacctcggc	agtcactgtc	ccagggaaacg	ctcaatgttc	81840
caaggaaggc	tctgcagccc	cagggaccag	atgatgaggc	tggccctgat	ggagcctcgg	81900
gcctgtgtcc	tgcaggagga	gcccgtggct	ggtgcacaga	cggacagggc	caagctcttc	81960
atggtggccg	tgaagcagga	gttgagccaa	gccaaactttg	ccaccttcac	ccaggccctg	82020
caggactaca	aggtttccga	tgacttcgcc	gccctggccg	cctgtctcgg	ccccctcttt	82080
gctgaggacc	ccaagaagca	caacctgttc	caaggtgccc	tggcttgagc	aggccacca	82140
ccctgagggc	agtgtgcgg	ccgctgtgtg	ggtggggggc	atctgggtcc	aagggtggtc	82200
ctgttctcta	gagaaaaagg	ggcagatggg	gacagacgcc	ccttctctta	caggcttcta	82260
ccagtttgtg	cggccccacc	ataagcagca	gtttgaggag	gtctgtatcc	agctgacagg	82320
acgaggctgt	ggctatcggc	ctgagcacag	cattccccga	aggcagcggg	cacagccggt	82380
cctggacccc	actggtaaat	ggggccccag	gtgggaccct	cagactcctg	cgtggaaggc	82440
agtgtggggc	agagtccctg	gctgcttggg	gtgggcatcc	tcggggccctg	cttggccccg	82500
cctctctgtt	cccctatggg	agtgtggggg	gcctccacct	ccaccaccag	caccagcagc	82560
accacctcca	ccttcaccac	caccacctcc	accaccacca	cctccaccac	ctccacctcc	82620
accacctcca	ccaccaccac	caccaccacc	acctccacct	ccaccacctc	caccaccacc	82680
tcacctcca	ccaccaccac	cacctccacc	tcaccacct	ccacctccac	ctccaccacc	82740
accacctcca	ccaccaccac	caccacctcc	acctccacca	gcagcagcat	cacttgtttg	82800
ggagaccctg	tgcaactcca	tgacacagcc	tgctccctgc	atagccccga	cccctaagca	82860
cagccctgtc	caactgccac	acgtcccttg	cctcccatgc	atggtcctgg	ggggtcaact	82920
gcacacgcca	gggtcctagg	gtcctagacc	cctgtcctcc	ctgttcttgc	ctctgttttg	82980
ggtggagtcc	aagtctccag	aggcggaagc	atctgtgttc	gtgtgttaat	gaacagcccc	83040
tacagagttc	ccctagtcca	cccagggggg	aacctagcct	gttgggacga	cccagatcc	83100
cttctgggct	tggtactcac	tgggatatcc	tcatgcctgc	acccagccta	cggctctgag	83160
ctcctgagtg	gggctttggc	ctgcccggca	ctgttccagc	ccccatccag	caggctgggtg	83220
tctcctctga	tgccccagc	acccaggcgt	gtacctgcct	gggttttccc	gccctgggtc	83280
gaggtgggtg	aggcctggcc	tccttagcca	gccctgcccc	cccaccccag	ggaactttcc	83340
agatgtctcc	gaccagcttt	gtggctctac	actcttcat	caggaagaac	ggcgccggat	83400
cccaagctga	ccgtgtccac	ggctgcagcc	cagcagctgg	acccccaaag	gcacctgaac	83460
cagggcaggc	cccacctgtc	gcccaggcca	cccccaacag	gtagctgact	cctgaaccgt	83520
gtgcagccta	cgacttggtg	ggtccctcag	tggcttcacg	aggctaactc	ttgagtgtgg	83580
ccggggctgc	ccctgtgggg	agccatctca	tgggtggggc	tgctccgggt	tctgcacccc	83640
gcagtgtctc	tgagcagctc	tccaggagtt	cctggaggaa	gggcgggcag	ggcgggtggg	83700
ctctcagctc	tccaccccag	cgcactcttg	agccatgcta	ctcccacacc	aggagacctc	83760
ggcagccaac	cacagtgggg	gtctggagtg	cccagagcag	ggaagcaggg	ccagcacgcc	83820
gtgagcgctc	acctggctga	tgcccgagg	gccctggggg	ccgcgggctg	tagccaactc	83880
ttggcagcgc	tgacagccta	taagcaagac	gacgacctcg	acaagggtgt	ggctgtgttg	83940
gccgcccctga	ccactgcaaa	gccagaggac	ttccccctgc	tgacagcaa	gtggccctgg	84000
cgtgggggaac	agccgggtggg	gtggggggga	ggggacaaaa	tgggggctgt	gccgggtctg	84060
attgaagctc	cccgcagggt	tcagcatgtt	tgtgcgtcca	caccacaagc	agcgttcttc	84120
acagacgtgc	acagacctga	ccggccgggc	ctaccggggc	atggagccac	cgggacccca	84180
ggaggagagg	cttgccgtgc	ctcctgtgct	taccacaggg	gctccccaac	caggtagggc	84240
acctgcctgg	ctgctcctgg	cagcgcccc	accgcacgca	gccctggggg	tgagcagcaa	84300
agccccaggc	ccccctcaga	ctcaagtctc	tgtctccagg	ccccctcacg	tccgagaaga	84360
ccgggaagac	ccagagcaag	atctcgtcct	tccttagaca	gaggccagca	gggactgtgg	84420
gggcggggcg	tgaggatgca	ggtcccagcc	agtctcctag	acctccccac	gggcttgag	84480
catctgagtg	gggtgagcct	catgggagag	acatcgctgg	gcagcaggcc	acgggagctc	84540
cgggcggggc	cctctcagca	ggctgtgtgt	gccagggctg	tggggcagag	gacgtgggtc	84600
ccttccagtg	ccctgcctgt	gacttccagc	gctgccaagc	ctgctggcaa	cggcactctc	84660
aggttggtgc	ctggccacta	cagttcctgc	tgggtgtagc	cccagggtgat	gggctgaggg	84720
ggaaaaggga	ggcccttgtc	ctggtggcaa	cgcctggcag	acgtgtgcag	tgggcccgtt	84780
gtctcacagg	cctctaggat	gtgcccagcc	tgccacaccg	cctccaggaa	gcagagcgtc	84840
atgcaggctc	tctggccaga	gccccagtga	gtgcccacgg	aggcccccag	cacacccaac	84900
						84960

gtggcttgat	cacctgcctg	tccagctctg	gtgggccaag	aaccaccca	acagaatagg	85020
ccagcccag	ccagccggt	tggcccgtg	caggccctcag	gcaggcggg	cccatggtt	85080
gtccctgcg	tgggaccgga	tctgggcctg	cctctgagaa	gccctgagct	accttgggg	85140
ctgggggtgg	tttctgggaa	agtgtctccc	cagaacttcc	ctggctcctg	gcctgtgagt	85200
ggtgccacag	gggcaccca	gctgagcccc	tcaccgggaa	ggaggagacc	cccgtgggca	85260
cgtgtccact	tttaatcagg	ggacaggggt	ctctaataaa	gctgtggca	gtgcccagga	85320
cgggtgtctt	gtggcctggg	cttgggtggg	ggagttgagg	gacagggagt	tggcagaggc	85380
ccctcccagc	ctgccatgtg	acactgtact	tcctccacgg	tgggtcagc	cctgcccctca	85440
tcctcacagc	cgcagccaag	ctgcagttgg	taggggatcc	accgacacac	caggctgcct	85500
gggctggtct	ctgggttggg	agctgcccc	ggtgctgagg	agggcagctc	cctggctggt	85560
gaggccccct	ccagaaccac	ccttggaactg	agctctgggg	agggatggta	ccaggtgggt	85620
gaggggggct	gcctggggag	ggaggggttc	ctatggggcg	tggcgaggct	ggcccagccc	85680
tctccccgcc	catatatgta	gggcagcagc	aggatgggct	tctggacttg	ggcggcccc	85740
ccgcaggcgg	accgggggca	aaggaggtgg	catgtcgggt	aggcacagca	gggtcctgtg	85800
tccgcgtgta	gccgcgtctt	ccctgtctca	gcaaggacca	tgagggcgct	ggaggggcca	85860
ggcctgtgcg	tgctgtgcct	gggtgtggcg	ctgcctgccc	tgctgccggg	gccggctgta	85920
cgcggagtg	cagaaacacc	cacctacccc	tggcgggacg	cagagacagg	ggagcggctg	85980
gtgtgtgccc	agtgtcccc	aggcaccttt	gtgcagcgcc	cgtgccggcg	agacagcccc	86040
acgacgtgtg	gcccgtgtcc	accgcgccac	tacacgcagt	tctggaacta	cctggagcgc	86100
tgccgtact	gcaacgtcct	ctgcggggag	cgtgaggagg	aggcacgggc	ttgccacgcc	86160
accacaacc	gcgcctgcg	ctgccgcacc	ggcttctctg	cgcacgctgg	ttctgtcttg	86220
gagcacgcat	cgtgtccacc	tgggtgcggc	gtgattgccc	cgggtgagag	ctgggcgagg	86280
ggagggggcc	ccaggagtg	tggccggagg	tgtggcagg	gtcagggtgc	tgggtcccagc	86340
cctgcaccc	gagctaggac	accagtctcc	ctgacctgt	tcttccctcc	tggctgeagg	86400
cacccccagc	cagaacacgc	agtgtccagc	gtgcccccca	ggcaccttct	cagccagcag	86460
ttccagctca	gagcagtgcc	agccccaccg	caactgcacg	gccctggggc	tggccctcaa	86520
tgtgccaggc	tcttccctcc	atgacacgct	gtgcaccagc	tgactgggt	tccccctcag	86580
caccagggt	ccaggtgagc	cagaggcctg	agggggcagc	acactgcagg	ccaggcccac	86640
ttgtgcctc	actcctgccc	ctgcacgtgc	atctagcctg	aggcatgcca	gctggctctg	86700
ggaagggggc	acagtggatt	tgaggggtca	ggggctccct	cactagatcc	ccaccaagtc	86760
tgccctctca	gggtgtggctg	agaatttgga	tctgagccag	ggcacagcct	cccctgggga	86820
gctctgggaa	agtgggcagc	aatctcctaa	ctgcccagag	ggaaggtggc	tggctcctct	86880
gacacggaga	aaccgaggcc	tgatggtaac	tctcctaact	gcctgagagg	aaggtggctg	86940
cctcctctga	catggggaaa	ccgaggccca	atgttaacca	ctgttgagaa	gtcacagggg	87000
gaagtgacc	ccttaacatc	aagtcaggtc	cggctccatc	gcaggctcca	actcgccct	87060
tccgatggcc	caggagcccc	aagcccttgc	ctgggcccc	ttgcctcttg	cagccaaggt	87120
ccgatggcc	actcctgccc	cctaggcctt	tgtctcagct	ctctgaccga	aggctcctgc	87180
cccttctcca	gtccccatcg	ttgcaactgc	ctctccagca	cggctcactg	cacagggatt	87240
tctctctcct	gcaaaccccc	cgagtggggc	ccagaaagca	gggtacctgg	cagccccgc	87300
cagtgtgtgt	gggtgaaatg	atcggaccgc	tgcctcccca	ccccactgca	ggagctgagg	87360
agtgtgagcg	tgccgtcatc	gactttgtgg	ctttccagga	catctccatc	aagaggctgc	87420
agcggctgct	gcaggccctc	gaggcccccg	agggctgggg	tccgacacca	aggcgggcc	87480
gcggggcctt	gcagctgaag	ctgcgtcgcc	ggctcacgga	gctcctgggg	gcgcaggacg	87540
gggcgctgct	ggtgcggctg	ctgcaggcgc	tgcgcgtggc	caggatgccc	gggctggagc	87600
ggagcgtccg	tgagcgtctt	ctccctgtgc	actgactcctg	gccccctctt	atttattcta	87660
catccttggc	accccaactg	cactgaaaga	ggcttttttt	taaatagaag	aaatgaggtt	87720
tcttaaagct	tatttttata	aagctttttc	ataaaaactg	ttgtagtgtg	acagctactg	87780
ggagggcagc	cggggacacc	tgagccgccc	gctgtgcccc	gatccctcag	gctgcctgcc	87840
atcagaactg	ctgcccgggg	cttcccctac	ctcagacaga	ccctccctgg	gaggatcagt	87900
ggggagtgcc	acctctgccc	ccagtggctg	tggcacgtgg	caggggcccc	tgaagctcag	87960
cgagggtcag	ggcctgggag	ggtatcattg	ctggaagaac	aggatggggc	tcaggccagc	88020
cctagtcgcc	ggggccca	ctaaccctcc	acttatgaat	tcttccctcc	cccaactcac	88080
aggggatttc	ccgagagggg	acctgccaaa	gacctcctcc	aggcctccca	tgcttcccgg	88140
gaagtgaagc	ttctccccct	ctggggcagg	ctctgaagcc	tcccgatgca	cccagagcaa	88200
ccagggggct	gcaccagcca	ctcgcctccc	cagcacggcc	aggttcccgg	ggctggaggt	88260
ccccccagg	tcctgggaac	caacctgcag	aacacacaca	gggtcccttg	gagaggacgc	88320
ggggacttcc	agggcccagc	tcctgtgagt	cacagccccg	cagctgctgc	gccaccccc	88380
ccctgactca	tgccccctcc	cagcagctcc	tcccaggacc	ccatgtcctt	cccacatccg	88440
caggaaggga	gtgccctggc	tctccaggcc	cacctgggga	gccccctacc	tgcccaccag	88500
cccctgagca	gcccagtaac	accatcaccg	tgtccaacag	ccaggagcct	ccacctccca	88560
ggaggggaag	gatggacaga	gccacactcg	ccgtctttat	tttgcactca	ccctgggtga	88620

cactgggcag	gccgctcctg	cccacagcca	gactgaggaa	gaacacagca	ctcggcaggc	88680
ccagtggggt	ccgtgcaggg	aggaccccag	gaccagcctt	actcccagagc	aggggacaca	88740
gggccccaca	gagaacccct	ccgggaggtt	ctctcctggc	tgggggaggg	ctctggaccc	88800
ccacaaacac	tccccaactt	gcggggctgg	ggcataaaaa	cagccactcc	cagcaggccc	88860
cctcagcttt	ttgcatacgt	cagctccctc	ccgggggatt	agggtgaggt	gaagccaggc	88920
ccaggcgtgg	ggtataggtc	ttcccccgca	ggcctcagcc	ctgtcccag	gctgcatcac	88980
aatccagggc	ccccgctggc	ctttgggaac	atggcctggg	tcttcctcaa	ggcaagatca	89040
gccccagacc	acttccgggg	tcacgggggc	acagggcaga	agccagatgg	cagccatggc	89100
tgacgggctt	cctcctcgat	ggggcgagga	cagccacggg	gtctcccag	ggteccacag	89160
ggctgtcctc	atgcagccca	agccagcctg	agcactggag	ccccaatcc	caaccaggctc	89220
tccctcagac	ccccagaaa	gggcctcgaa	aggccgccgc	tgccgctgt	ggaaaggctg	89280
ccgctgcagg	gcctggggca	gccgggctgc	cagactcccc	tccaaagcct	ccggatgcct	89340
acgcttttcc	agacatagag	gaaagtttgt	cttcgagaaa	acaaagtaaa	tagaagaacc	89400
ccaaagcaaa	gcaaacccac	ccccagatc	agcagcatgg	gagccaacag	gaggccactc	89460
ctccagcacc	aggggaccag	ccgtcccagc	ggcagcgagg	ctgcgcctac	gtgatgtccc	89520
tctgccgcgg	cggccgggtg	acattccgca	cgacacactt	caccatccac	togatgcctt	89580
cgcgcacccc	tttgctgtga	agacacggg	tgttagggcg	ggggtctcgg	tccccaaagc	89640
ccccgcagg	gcagccccca	ctcaccctgt	gaggggcgag	caggcctggg	tcaggcaatc	89700
gcgcctgccg	atcttgcctg	tgcagtcgct	gaaggccgct	ttgatgtcag	ggattgagag	89760
gcacgtctgg	gggaggttaag	gccgtgagga	gcagccccc	cgtctggccc	tgtcctgcct	89820
gtgggcccgg	gactctcaga	agggcgatg	cccttcaccc	cagggaacaa	gccagagctc	89880
caccagggct	ccagtgtctc	ccacagagac	cacagcagtg	aggaccctgt	gctcagcccg	89940
aggctgaaca	tggctggtag	tgcctgagac	aaactagacg	tccacacggc	tccaaggagt	90000
ccacccccca	tcccctccct	gggggacacc	ctgagccccc	aggtggggcg	ctgaggactg	90060
aggctcctcg	ggcagtgagg	gaggcaggtc	ccaggggccc	acacagccgg	ggatgatgga	90120
gagggtgggag	ccctgcacac	gtgatggggg	cagtctgcag	tcattggtgg	ttctgtctac	90180
aaccacctgc	ccagtcttca	aaaagcagcc	ctcccctccc	cttttccctc	gaggggagac	90240
ccctgccccg	taccagatgt	ccctcttgtc	ggctgagatt	gtaggggagg	ccagccttac	90300
aggctggggg	caacagagcc	accccagaga	aggcaggaag	tgaagattca	cccggccctc	90360
tggacgcccg	gctgcttctg	tgcaaagcca	ctccaagaga	acagctagaa	ctcagcgctg	90420
ccagtgtctc	cgggggcag	ggcacctcag	aggggtcttg	aggggctgcc	ctgggggttg	90480
ggctggcaca	gatgccacct	ccaagggtag	caggaaacag	taagggtcag	agctgactcc	90540
caccagggcc	ccagcatcac	ttctttgagc	tctgagtttc	acctgggtgt	ccccacagct	90600
tggccacaca	ctcctgagac	acggccgccc	tcctggggag	aggtgccctg	catagcagga	90660
agaggcctct	gggcccctgc	cctgaggtgg	gagaacctcc	agggctggca	gcagcaggtc	90720
tggagaggaa	ccaagcttgg	gaagctgctg	ggggcagggc	aggccttgag	aatggctctg	90780
tacccccctg	gcagtcactg	ggcctggggg	gtctgggtgc	acacctactc	cccttgctgt	90840
gggggagggt	ggggactcgg	gaagctgctg	cgggagggcag	gggtggggct	cacctccaca	90900
tcctgtctgt	tggccagcac	caagacgggg	acaccgcaca	ggcctcgtct	ggtcaccacc	90960
ttctctgggg	agggcaggag	aggcagcgcc	tcacacccag	catcctgcct	ctgactgccc	91020
aggggcccac	aggcgtggac	actgtgacag	ccactccctc	tgcccccccc	ccgtcaccca	91080
ctaggcagga	gcacttctga	ccagacactg	agcctgcccc	aggcacagag	ctgccccaa	91140
tggacctgcc	cccactcacc	atccatccct	cccagagcag	ccaggccgca	ctcaccaaac	91200
gcctgcttgg	actcagccag	cctctcctcg	tcgggtggag	caatgacgta	gatgacggcg	91260
tgacactccg	cataaactg	ggaggaagca	ccaggagtgg	gggctcagtc	cccaccctgc	91320
caaggggccag	cagagccagg	cctgtgtcat	ggccacagtg	aggggctcac	atgaggaagg	91380
ggcaagaggg	cagcccccaa	ctgcaagacc	cttctgggat	gcattctggg	gttgccggga	91440
gatctgggtg	aggtgtcccc	agacgctgct	cctgagaacc	tgccggcaac	ctttggccctg	91500
atggtggcca	aaggtgaaag	acagggattg	ggccaggcgt	ggtggtcac	acttattatc	91560
ccaacacttt	gggaggcaga	agcaggagga	tcacctgagc	ccacttcacg	gccaacctgg	91620
gcaacacagt	gagactccgt	ctgtacaaaa	gcttatggta	atgtgcgcct	gcagtcctag	91680
ctactcggga	ggctgaggtg	ggaggatggc	ttgagcctgg	gaggttgagg	ctgtagttag	91740
ctctgatcac	accactgcac	tcagcctgg	gtgagaatga	gagaccctgt	ctcaaaaaaa	91800
agataggggt	tgggggctgg	aggaacctag	accacagcct	ggcccgttga	gggagtgcac	91860
ctgtggggct	ctgtgccagc	acctgcgaca	gggagggagt	gtggccatgc	ggataagact	91920
gaccagcacc	atctacgaag	cgagccttcc	ctgccaggac	agggccagag	tactgagct	91980
cagacctctg	cagcctgggc	tggctcagtc	tgggctcgct	ggcaacactc	ctgggcaaga	92040
cagggcacag	cccctgcagc	ctcaggtaca	agtgtgagc	cctggaccag	atgagtgcac	92100
ctctatctca	atcagaaaaa	aacacagcaa	actccgcgtc	cacgtggagc	agacaacagc	92160
tcacatttgc	cactttgcct	ccaggctgtg	ccagctctcc	tgtccaggca	tgagtgccca	92220
gagacctaga	actggatgct	gaccaggtag	gacaagctgg	tggctcagtg	gttaagacac	92280

acacacccga	gagcatgaga	agccaggagg	cacagcccaa	ctctccgaaa	tccttagggt	92340
gtctgagcag	ggagtaccag	acaaccccat	cccagtgcc	gacaagcttg	tgcacctgca	92400
cttcccacag	aggagagaag	cctgtgcacc	tgcacttccc	acagtggaaa	ggaggaggcc	92460
caaggccagg	cccccccacc	cccagggaact	tcccacagt	gagaggaggc	ccaaggccag	92520
gcgccctcca	gggttctgca	ggtagcgagg	cccccccacc	cccagggaact	tctctggcct	92580
acagacagg	cccacacaga	ggccgccaac	ccctcaagg	accctgcagt	gtgcccggctg	92640
tctgtctgtg	acacaaggga	gcaggcggac	cctaagggtg	agacctctgt	ggcaggagg	92700
gcggtctgtg	ggaggctgca	gcaagcccag	tgagagaatc	tccacgtggc	tcctggggct	92760
tctgagcagg	gtggcagaag	gttcatgtgc	aaccgggtcc	tggaccatgg	gaccacgtgg	92820
ccagagccac	ccatcacacc	taccaggcac	aagggtgcac	gcccagcagg	gccgcagtgg	92880
acgggagcga	cacctcagg	ctgagtgcgg	gcaggacca	gagccccacg	ccccagtgga	92940
ggcgtcacag	cagtggctcat	tgtgggggtgc	cccacaagga	gggggaagag	ggagggtgtcc	93000
cagcgtggct	cctggctggc	cagctgaccc	cagtggagca	gtcagaggga	ctgtgggtct	93060
gagtttttct	ccccagcagc	aatgggagct	ccccaaactgc	aaagtgccag	ccagcctgag	93120
agactagtgt	tacagcaaag	aacccaggag	gctaggctct	ggcacatgcc	acacatgttg	93180
acaccaaccc	agggtcccagc	cccaggacga	ggcgaattcg	caatgacgcc	cctttctgtg	93240
gtgctggctc	tgcacaagga	tgcaggatac	aggaaccagg	gtgggagcag	gggcctccct	93300
tccggctccct	cccagtgacc	taggggggtc	cctgcagctg	atcctcccag	ctctgagctc	93360
agcagggtca	gggggtcccgg	ccactagagc	agcacatact	cagcagacac	gctgaatgac	93420
gagccacagc	tgcctcatgg	gcatgacttg	cacctcatgt	ctaggagacc	ctggtgggca	93480
ggagatgggg	ctgccatccc	acagctgtcc	cacagctggg	gacccaggga	gccactggcc	93540
ccaccacggt	ggtgtctgga	gaagggtcca	gactggccag	aagtcgcacc	ccagcagaag	93600
tggtagtgaa	ttgggagggc	actcaaggaa	gggctgtgca	gccccaaagc	cagcagcaag	93660
gatgggctac	agtggccccc	ttaagtctcc	ctcttccagt	ttcgccctaa	gagaggccct	93720
caggaccttg	gaggaacccc	tctccaacgt	ggaagtgtgg	gtccacatag	ggctgcagct	93780
gtggccagtg	caggcatctc	tggccccact	gtattctctg	ttcatgttgg	agaacactgc	93840
accagcagat	ggtctcatct	tggtttctgt	gggacccact	ttggctgcaa	agagccacac	93900
tgccagggtca	cacctgcccc	gggcagccca	cactggggac	ccaccaggcc	atggtgtgaa	93960
gtcccggcca	gcctggcccc	acatggcaca	gcatagccag	ttctcctoca	gggctccctg	94020
ctgggccaac	cacagctctg	cggatcctgc	tgcctgagtc	gacctctcct	ctcccgtcct	94080
ccctgccttc	ctgggtccga	ccccagtggt	gcatcctgta	cctcgacctg	tctcagcatc	94140
tgtgcctgag	acaccggcct	gtgacaagat	catcatcatc	tgtgtcactc	cccaagcatg	94200
ctgcgactg	gacacacagg	ccctgactca	acttgctctg	tctgacttca	gtggtcctac	94260
aggatctatc	agagatcact	tggccatggg	agaaatgtct	tcttggctag	aagtccacag	94320
aggaggggac	actttggggg	cgcttaggaa	aggggaacta	ggatcaaaaa	agagatcagg	94380
acctgggcac	tcagctctag	agatggcatc	agggcagcca	aggcactggg	gacacccac	94440
acccactgtg	ccagcctagg	gcagggagcc	cgagggaagcc	acaggctctg	ccctgctcag	94500
tgtctggactc	agtgcctggc	ccaggctgag	aaggagataa	actgcagcct	tgggggtgtg	94560
gggaaggggc	accacactgg	gatctcagaa	atgccccaaa	cctgtgtcaa	aataggagac	94620
tgcgctgtg	agaccctgag	gagtcttctg	gtgatcatgg	aagaacaaat	gttaagctag	94680
aactgaagga	acctcatcag	gggagaggca	gccatcctgc	cgtccccaca	tctgggtctt	94740
gccatttctg	tgtcctgtgg	tggtcagcag	caaggctctc	gagccgaaag	gaggcactca	94800
ctttggagga	gtgcagggtc	cccaggctcc	cacactttgt	cttgtcctga	ctgagaaaga	94860
aacagactgc	cctgacctct	ctgacttggc	cagcgagggt	gcccttaggc	tcaaacccaa	94920
gccagggttt	gaacattccc	agacacttgt	aagatgttta	ggttgttaac	ataatgttca	94980
ggtttcaaaa	cattgaaaga	aactagcccc	agccctgaac	ccagatcccc	cccgtcttca	95040
ggcatgacca	gtgaacacgc	ccttctctca	ctggctcacct	gaggatgccg	cactctgtca	95100
acagggtccc	ctaatacatg	ctctgatctg	atcgcttgg	catttagtga	ttctttccct	95160
ggaattctcc	actggcccca	tgcaggggaa	ctcccaagt	ggaaactccc	ctaccaccac	95220
ttttggggca	acttcagcta	agggttcagc	tgggacaaaa	caggagacca	ctcggaacc	95280
tgggacagga	ccagagagaa	aacccagggg	acagagtggg	taaggaaagc	tgtgaggaa	95340
ggggccaaa	ggcactctgg	aaagaagtgg	cactggagg	ctgggggtgg	ggtggtcctg	95400
gccagggagt	cttaccttgt	cccacaaaga	ctgcagctct	tcctgccctc	ctaagtccca	95460
gaacatgagc	cgagcctttc	ccacatccac	agtgcggact	ggggagagga	ggaaacaggc	95520
aaggctcatg	accttgggtcc	tgcacacacc	cagtcccagc	tctcccagg	gatggggcaa	95580
accatgctgg	tgccactcaa	atgagacttg	agagggggcc	gacagggtg	tggccacggg	95640
ccagctggag	tgtgaatatc	acggcatcct	caagggcccca	aacccacagc	ctgctattga	95700
gacccttact	gtttaggccc	acgggtgggg	tgttttggga	tagactcatc	ccctttagtg	95760
tcttgttaaa	tgggggtttc	gactgctcca	ggaagggtctg	aggagagagg	cagaggcgaa	95820
acacatcaag	gaggggctat	actggcttcc	aaatatcctt	actcagggtct	gttctttaaa	95880
agacagaaac	agaaacagag	caacactctg	ctcttcagga	ggctgggtgg	gactatcctg	95940



ccgtctcagg	tgaattttgg	cttccgtctg	ggtagtgaac	gtgcagctga	cagcacaaaa	96000
ccgaaggggg	cgccgcccagg	ccgtgggaaa	ggtgcgcgca	agggcggtggg	cactcaccgt	96060
cttcccagca	ttgtccaggc	ccaggatcag	gatgcagtac	tcgtccttct	gaaacatgta	96120
cttgtagaag	cccgacagca	gcgtgtacat	cctgcccctgg	gcaccccaac	ataggtcagt	96180
gtgcagccag	aaagcacctc	ccctcccccg	ggcttctcca	cggtggtcag	tggcgcccca	96240
cgccagccg	accgctcagg	acgagagcct	ggggggccatt	cccgaactcct	cgccccctc	96300
ccaccccgtc	cctctgtaac	ttctcccagg	tcagccgcca	ctgtgtcctg	ctcacagcaa	96360
tgactgcgac	ctctccgcat	acacatcggt	tccggcccct	ccccgtctcg	cgggactacc	96420
cagccgggtg	ttcacagtga	gctcagccgc	gctcccgcct	ccccccgagg	cttcgctccc	96480
acgtcttcacg	cgcgcggaac	ggggaacaca	ctcgctgcag	ccccgcctgg	gccacggcac	96540
cctcgagcgc	cagcccccg	ccccacccgg	gagcagcgag	ccaccggcgc	gctccccagg	96600
agccccctgca	ggcgccgggt	agggacgccc	catcacccca	tttcttaaaa	cggggacggc	96660
cctgggggga	gcggaactaca	ggcggggtga	gcagcgggcg	ggctgtcctc	ggagtgcacc	96720
tggaaggcggc	gcgcggttg	cagggaacga	ctgcgaagga	agaacctggg	tcgcgggccc	96780
cggtacgtc	cgccccaaagc	cgccgcccgc	aggtctgagg	ctccccgaca	agcagccaaa	96840
gctggctcct	gtcacaccgg	cgtcccacct	cgagtcctgg	gccggccctc	gggctctcg	96900
cctaccgca	cagcctgcgg	cctacctg	tcgcgcgcgc	cctcgagacc	gctgctgctg	96960
acccccgctg	acctccgctg	acccccgctg	aaacccgcgc	ggcgctgac	gggacgcggg	97020
ccggcctcag	ggaatgagct	gaaccgcgtc	ccagcgccct	ccgcgctccg	cttcccggct	97080
gccccgcgc	gccaagcact	tccggaagcg	gcggcgctcg	ggaggaagt	ccgatcggt	97140
gctggggcga	aaagggggcg	ccgggcccgt	ctagccgggt	agggcgccgg	gctctctgtg	97200
gctgcggctg	ggaaaccgcg	cggaggaggt	gcccggccgg	ggaccaggtg	gccgcggttt	97260
gcggggacgc	ggccctggcc	agacagaaga	gacgcggggc	ggggggggcg	ggccggccctg	97320
gaaggcgcg	ggcgcgcg	gtgggctcg	cggagggtga	ggcggggggg	cgccccgcgg	97380
ggaaggggct	ccggagtac	gcgggacccg	gctagcgggc	agcccacggc	ggctcggaag	97440
ggaagcgcg	agcctgagcg	ggggtacccg	ggctgcgacc	tctgcgctgg	gagctgtgcc	97500
tctgagccgg	tgtctccccg	agggaaaggg	gacgtgcccg	tgcccgtgcc	cgccctcagg	97560
ctgtggggtc	gttcccagga	cgccggggctc	agctggcttc	tcttcttgca	gcccctggctc	97620
agcgccctcc	tctctcagca	tggacagga	gagcctggag	tcggccttgc	agacctaccg	97680
tgcgagctg	cagcaggtgg	agctggccct	gggcgcgggc	ctggattcgt	ctgagcaggc	97740
tgacctgcgc	cagctgcagg	gggacctgaa	ggagctcatc	gagctcaccg	aggccagcct	97800
ggtgtctgtc	aggaagagca	ggttgttggc	cgcgctggac	gaagagcgcc	cgggccgcca	97860
ggaagatgct	gagtaccagg	ctttccggga	ggccatcact	gaggcggtgg	aggcaccagc	97920
agcgggcccg	gggtccggat	cagagaccgt	tcctaaagca	gaggcggggc	cagaatctgc	97980
ggcaggtggg	caggaggagg	aagagggaga	ggacgaggaa	gagctgagt	ggacaaaggt	98040
gagcgcgccc	tactacagct	cctggggcac	tctggagtat	cacaacgcca	tgggtgtggg	98100
aacggaagag	gcggaggatg	gctcgggcg	tgctcggtg	ctttacctgt	acccctca	98160
caagtctctg	aagccgtgcc	cgttcttctc	ggagggaaa	tgccgcttta	aggagaactg	98220
caggtaaaagc	cctttgttgt	cagatgccaa	ccttaggggc	gtaaggggca	cgcacacagg	98280
gtcgggctcag	gatcgccctc	ccctttgtct	tgcagttttg	tctcagcttc	ctggggcagg	98340
cgtgctttga	cagctgtgtc	tgtgttcagg	cgtctacgtc	ttccttcttg	ggtgaatcaa	98400
gaagcatgga	aggaggccag	gcgcggtggc	tcacgcctgt	aatcccagca	cttttaggaag	98460
ccgaggcggg	cagatcacct	gaggtcagga	gttcaagacc	acgctgggtca	acatggtgaa	98520
accccatctc	cttaaaaaaca	caaaaatgaa	ccggtcgtgg	tggcgcgcac	ctgtggtcct	98580
ggctactcag	gaggtgagg	caggagaatt	ggttgaaccc	aggaggccga	gtttgcagt	98640
agtggagatg	cagccactgt	actgcagccc	gagcagcagt	gcaaggctta	tgtggaagag	98700
agtaggtctc	cagcctatcg	tcagtttttt	tttggtgggt	gttttaattt	tttttgagac	98760
agggctcttac	tttgtcaacc	aggctggagt	gcagtggtat	agtcctggct	cactgcagcc	98820
tggacctcct	gggtcaacc	gatectctctg	cctcagcccc	cctaggagct	gggctacaga	98880
ctcacgctac	tacacccagc	taatttttat	attactataa	ttttttatct	tttttttgag	98940
acggagtctt	gttctgttgc	ccaggctgga	gtgcagtggc	gtgatctcgg	ctcactgcaa	99000
gctccgctc	ccgggttcac	gccattctcc	tgccctcagc	tcccagtag	ctgggactac	99060
aggcgcccg	caccatgtct	ggctaatttt	ctgtattttt	agtagagacg	gggtttcacc	99120
atgttagcca	ggatggtctc	aatctcctga	cctcgtgatc	cgccacccct	ggcctcccaa	99180
agtgtggga	tgacaagcgt	gagccaccgc	gcctggcctt	tttttttttg	agacagagtt	99240
tcactctcct	caccaggct	ggagtgtagt	ggcgcaatct	cagcttaccg	caacctctgt	99300
ctcccggtt	gaagtaattc	tctacctcag	cgtccagagt	agctggcatt	acaggcgccc	99360
gccaccacac	tcggctaatt	ttttgtattt	ttagtagagt	cggagattca	ccatcttggc	99420
caggctggct	ttgaactcct	gacctcgtga	tccaccacc	ttggcctccc	aaagtgtctg	99480
gatcacaggc	gtgagccact	gcgcctggcc	ctgtgtgttag	ttttattctc	tagagttaa	99540
cttttaaaatt	ttactttcat	ggagattttc	aaacataccc	caaattagag	agtttagcat	99600



aatcaccgcc	cacgggtccat	catccaatgt	cgtcatttat	taatatatttc	ccagtctcat	99660
tttgtctggt	ctccctgccc	tatttttttc	tttcctgggc	cattttaaaag	caaattccag	99720
aagttactgg	ttttttccaa	ttatgaatac	ttcatagttg	catctctaata	ctaactgatt	99780
aggaaattac	ttaaaaagta	acttttttga	agtccaagtc	cgatgtgagg	acaaaaaaga	99840
gtaacttctg	tgtcataata	ggtaacacat	ttaatggtaa	tacctcttcc	atattcaaat	99900
atgaacaatt	attactgtaa	tgtctctatt	cccctaagcg	catagcttta	tttttccctcc	99960
tttttacttt	tctcttagaa	gaaatattta	ccaagccttc	tagtaggtaa	tttttcttttt	100020
tagccaatag	ttcaggctga	ccgtgtaacc	atccctagtt	ctagtcttag	ttcttttgaat	100080
gtcttccctt	tttttttttt	ttgaaacagc	gtcttgctgc	tctgtcaccc	aggctggagt	100140
gcagtggcac	aatctcggct	cactgcaatc	tccgcctccc	tggcccaagc	catcctccca	100200
cctcagcctc	cctaatagct	gatactacaa	gtgtgcactg	ccacgcccag	ctaattttttg	100260
tattttttgt	agagacggga	tttcaccata	ttaccaggt	ctcgaattcc	tgatcccttt	100320
gatgagagat	ctgacacatc	cctgtggtgc	tcctcttgga	ccaggcactg	ctccaagggt	100380
ttcataatac	ttcattcatic	tgtgcaacag	ccctgtaggt	aggccctgca	gtcacaccat	100440
ctgacagagg	aggaaacagg	agtagaagaa	ctgagtgggt	cagggttcca	aggctcagag	100500
ggctccagtt	gccccagcc	ctcgttccgt	ccctgtctcc	acccagtgtc	gcttgccatg	100560
tgggcatcag	gcctgatctg	aaagcttccg	gagcatctta	cagacgtcca	ccttgccacc	100620
attcaggact	gataagttct	cttggaattg	cgttggacct	tttttttttt	tttaagatgg	100680
agtttactg	ttgttgccca	ggctagagta	caatggcag	acctccacct	cctgggtcca	100740
agggattctc	ctgcctcagc	ctcccaagta	gctgggatta	caggcgctg	tcaccacgtg	100800
gtgccagctg	aattttttata	tttttagtag	aggcagggtt	tcaccgtgtt	ggccaggctg	100860
gtctcgaacc	cttgacctca	ggtgatcccg	ccttggtttc	ccaaagtgtc	gggattacag	100920
gcatgagcca	ccacaccagg	cccaggattt	ctttatata	tctggatata	atcccttatg	100980
aagtatatag	tttgagata	tttgctccca	ttgtttgggt	tgtcttttca	cttgatatag	101040
tgtcctttga	tgcacaaaca	ttttaaat	tgatgcagtg	caattttattg	tttctttatt	101100
gcctatgttt	ttgtcatcag	gtttaagaaa	ccacctcatc	catagttatg	aggattttca	101160
cctatgtttt	cttctaagag	ttctgtagtt	ttagctgtta	aatttaggtc	tttgatccat	101220
tttgagttaa	ttttgtata	tgttattagg	tgagggtcca	ctttattctt	ttgcatgtgg	101280
atttccagtt	ttcccagcac	catttgttta	aaagactgct	ttttctccac	tgaatgggtc	101340
tggcactttt	gtccaaaatc	aattggcaat	atatgtaagg	gtttatttct	gagctctctc	101400
tcctgttcca	ttgggtgata	tgtgccagta	ccacactgtt	ctgattatta	tagctttgtg	101460
ataagtttta	aactcaggaa	gtggtagtta	ttcaccattt	gtcctctctt	ttcaagtttg	101520
ttttgtttct	ggatcctttg	caatttcata	tgaattttag	gatcggtctg	tccaattctg	101580
cataaaagac	agtttgaatt	ttgatatgga	ttgcatagaa	tgtgtagatc	tgtttggggc	101640
acattgtcat	ctttacaata	ttaagccttc	tggctgggtg	tgggtggctga	cgccgtgtaat	101700
cccagtaact	tgggaggctg	aggcgggcat	atcacttgag	gtcaggagtt	caagaccagc	101760
ctggccaacg	tgggtgaaacc	ccgtctctac	taaaaataaa	aaacaaatta	gtcggagggtg	101820
gtgcacacct	gtaatcccag	ctacaggaga	gggtgaggca	ggagaatcgc	ttgaacctgg	101880
gaggaggagg	ttgcagtgag	ctgagatcat	gccactgcac	tccagcctgg	gtaacagagg	101940
gagactccat	cttaaacac	aacaataaca	gaagaaaaaa	acagtattaa	gtcttccaat	102000
tcatgaatga	aggatctgtc	catttattta	cgtctttaat	ttctttcaac	agtattttgt	102060
actgttcaag	tcttgacat	tcttgggttaa	ataagattta	tttttgatgc	ttctctaagg	102120
aattgttttt	cttttctttt	ttttttttga	gacagagtct	tgtctgtgca	cccaggctgg	102180
agtgcagtg	cacaatcttg	gctcactgca	acctctgcct	cccgggttca	agcaattctt	102240
ctgctcagcc	tcccaagtag	ctgggatcac	agggtgcctg	caccacaccc	agctaatttt	102300
tttttttgag	atggagtctt	gctctgttgc	ccaggctgga	gtgaagtggc	ccaatcttgg	102360
ctcactgcaa	gctccacctc	ccgggttcac	accattcttc	cgcctcagcc	tcctgagtcg	102420
ctgggaatac	agggtgcctg	caccacgccc	agctaatttt	ttgtattttt	agtagagatg	102480
gggtttcacc	atgtagccag	gatggtctcg	aactcttgac	ctcagggtgat	ctgctgcct	102540
cggcctccca	aagtgcctgg	attacagatg	tgagccactg	tgcccggtc	gagttgtttt	102600
ccttagttac	attttcaggc	tgtttgttgc	tagtatatag	aaatacaagc	tgggcaccgt	102660
ggctcacgcc	tgtaatccca	gcactttggg	aggccaaggc	gggtggatca	cctgtgggtca	102720
ggagttcgag	accagcctgg	ccaacatggt	gaaatccagc	ctctattaaa	aatacaaaaa	102780
ttagtctggc	atggtggcag	gtgcctgtaa	tcccatctac	tcaggaggct	gaggcaagag	102840
aattgcttga	acctgggagg	cggaggttgc	agttagctga	gatcgcgcca	ttgactcca	102900
gcttggggaa	caagagttag	acttcacttc	aaaaaaaaaa	aaaaagaaat	acagtggatt	102960
tttttatgtt	aatcctgtat	tgattgctga	attgggtttat	tagtgctaata	aggatttttt	103020
atgcataatt	taggattttc	gatataata	atcatatata	ttcaatatat	acaattaata	103080
tatatgtgaa	tagagataat	tgtagtcttt	gtttctagtt	tgcattggcat	ttatttcttt	103140
ttcttgctta	actgccttag	ctagaacttc	aagtacgatg	ttgaataaaa	gtgactagag	103200
cgggcccggg	gtggtggctc	acacctgtgt	tccagcact	ttgggagggtg	gaagtgggca	103260

gatcacttga	gatcagcagt	ttgagaccag	cctggccaac	acggcgaaac	cccatctcta	103320
ctaaaaatac	aaaaattagc	tggttgaggt	gatgtgcacc	tgtagtccca	gctacttgag	103380
agggtgagac	atgagaattg	cttgaacctg	ggggcgagg	gttgagtgga	gccaagatca	103440
tgccactcca	ctccagcctg	gacgacagag	caagaaccct	gtctttaaaa	aaaaaaaaaa	103500
aaaagtggct	agaacaaaaca	tctttatctt	gttcctgata	ttaggtggaa	aacttttttg	103560
ttcctgatat	taggtggaaa	acttttagtc	tttactgtt	gaatatgatg	ttacttgtag	103620
gttttctgta	gattcccttt	atcgagttga	ggaaattctc	ttatattcat	agtgtgttga	103680
gtgtttttta	tcatgaaagg	gtgttgattt	tttttttaaa	gatagggtct	tgttctgtca	103740
cccaggctgg	agggcagtg	catgatcatg	gctcactgca	acctcgaatt	cctgggctca	103800
ggggatcctc	ctacttcac	ctcctgagta	ggtgagacta	caggcatgag	ccaccatgcc	103860
cagctaattt	tttaattttt	ctgtagaggt	agggtcctgc	tttgctgccc	aggctggtct	103920
taaactccag	ggctcaagca	atcctgcctc	agcctcccaa	agtgttgaga	ttacaggggt	103980
gagtcactgc	actgcaccca	gctgtgtggg	atttttcaaa	tgcttttttc	ctttagatga	104040
tcatgtgtgg	tttttttctt	ttcattttgt	taatgtggta	tattgatatt	cgtatgttga	104100
accatccttg	aattcctcag	ataaagcacg	catattcatg	gcgtattatc	tctttattat	104160
tatttttttt	gtagagatga	gatttcactc	tggtgcccaa	gctgggtctca	aactcctggg	104220
ctaaagtgat	cctcctgcct	cagcctccga	aagcgctggg	attataggca	tgagccactt	104280
ggccttatct	tttttctttt	tctttttttt	ttttttttga	gacagagtct	cactctgtcg	104340
ccgggctgga	gtgagtggcg	cgatctcggc	tactgcaaac	ctccatctcc	cgggttcaag	104400
caattctcct	gctcagcct	cctgagtagc	tggtgactaca	ggtgcccggc	actatgccc	104460
gctaattttt	tgtgttttta	gttgagacgg	tgttttgcca	tggtggacag	gctggctctg	104520
cactcctgac	ctcgtgattc	accaccttg	gcctccgaa	gtgctgggat	tacaggcatg	104580
agccaccgca	cgagcctta	tctttttaac	agttaaaagt	ttaaggcctt	atcatgtaat	104640
aacattgctg	gatttgattt	gctgctgttt	tggtgagaat	atttgcattc	gtattgataa	104700
gggatatttg	tctgtagttt	tcttttcttg	gcattgtctt	gtatagcttt	gatgccagca	104760
taatattggc	ctcatagaat	gagttaggaa	gtattcttta	tattatggga	agaggtaaaa	104820
agggtattgg	gttaattctt	cttcaaatgt	ttgatagaat	tcaacagtga	agtgatatat	104880
acaatcatat	atatagagag	agagagagag	agagatggac	ttttcttttg	ttggaagtct	104940
attgactatt	gattcaattt	ccttattgaa	attgactttt	ctttttggaa	gctaaaatgt	105000
ataactgtag	tgaaagtctc	tgaacttttc	tttcattgga	agttttttga	ctactgattc	105060
tttatttggt	ataggtctat	tcagattttc	tggttcttct	tgagtcagtt	tggtctcgct	105120
ctgtcgccca	ggctggagtg	cagtgggtgc	atcttggtc	actgcaactt	ctacctcccg	105180
agttcaagtg	attctccac	ctcagcctcc	ccagtatctc	ggactacagg	cgacgccag	105240
catacctggc	taatttttgt	attttttagta	ggaacagcat	ttcaccatgt	tggccaggct	105300
ggtctcgaac	tcctgacctc	agggtatcca	cccgctcgg	cctcacaag	tgctgggact	105360
acagacataa	gccaccgct	ccagccttga	gtcagtttag	atagtttgca	tgcatgtttc	105420
taggaatttg	tccattttgt	ttatgttatc	taatctgtta	ccatacaatt	gttcatagta	105480
tccttttata	gccctagtta	tttctgttaag	atcagtagta	atagctccac	tttctctctt	105540
ggtttttagca	atttgagtca	tctcttttct	tcttcttttt	ttttttttga	gatggagtct	105600
cactgtgtca	cccaggctgg	agtgcagtg	catgatcttg	gctcactgca	acctctgcct	105660
cccaggttca	agcaattctg	ccttagcctc	ctgagtagct	gggattacag	gtgtgagcca	105720
ccacaccag	ctagttttgt	tttgtttttt	tgtttttgag	acggagtctg	tttctgtctc	105780
ccaggctgga	gtgcagtggt	gcaatctcac	tcatttgcaac	ctccgactcc	cagatctccag	105840
caattctcct	gcctcagcct	cccagtagtc	tggaactata	ggcgtgcacc	accacgcctg	105900
gctgattttt	atatttttag	tagagatggg	atttcacat	gttggccagg	ctggtcttgg	105960
actccctacc	tgaggtgatc	cgccacactt	ggcctcccaa	agtgtggtga	ttataggcat	106020
gagccaccat	gcccagccag	tttttgtatt	tttagtagag	atgggttttc	tcctctgtcg	106080
ccaggctggg	cttgaaatcc	tgacctcagg	ttatccacca	gccttggcct	cccaaagtgc	106140
taggattaca	ggcatgagcc	accacgcag	gcctgtcttt	tcttcttggg	cattttctgt	106200
aaagggttgt	caatttttgt	gatctttttt	gttgctgata	tctattgttt	tccattctct	106260
tttcatttat	ttccatttta	acctttgttt	ccttttttct	gctggttttg	gttttaattg	106320
ctcttttttt	cccctaattt	ttcaaggat	acagtttaagt	tattgatttg	agatctcttt	106380
tttcttttct	tttttttttt	tttttttttt	tttggttgct	gttgagatgg	agtctccctc	106440
tgacccacag	actggagtgc	agtggcatga	tctcagctca	ctgcagcctc	cgccgcccag	106500
gcgattctcc	tgccctcagcc	tcctgagtag	acgtttcccg	gccaagggtg	ttctttttga	106560
atgtaagcat	ttacagctac	agatttccct	ctaaacactg	ctttcactgc	attccataag	106620
attgtttttg	gttggttttt	gttggttttt	tggtgtttga	gacacagtct	cactctgttg	106680
ccgtttttgg	agcagcgatg	cgatcatagc	tctgtagcct	tgagctcctg	gactcaatca	106740
gtcctcctgc	ctcagcctcc	caagtagctg	ggactacagg	tgtaaccac	tgacaccta	106800
taattttctt	tataagtttt	tgagaggcc	aggcacagtg	gctcacacct	gtaatcccag	106860
cactttggga	ggccaagggtg	ggtggatcac	ctaaggctcag	gagttcgaga	ccagcctggc	106920

cgacaggag	aaaccccatc	tctactaaaa	atacaaaaat	tagctgggcg	tggtggcagg	106980
tgccgtgaat	cccagctact	caggaggctg	aggcaggaga	atcgcttgaa	cctgggaggc	107040
agagggtgca	gtgagccagg	atcacaccat	tgactccag	cctgggtaac	aaaagcaaaa	107100
ctccatctca	agaaaagaaa	aaaaaaagtt	tttgagaga	cagggtatca	ctttgttgcc	107160
caggctggtc	tcaaacctct	gacttgaagg	agtcctactg	cctcagcctc	ccaaagtgc	107220
gagattatgg	gcaagagcca	ccgcaccctg	ccacttggct	gttttgttct	gttgatattc	107280
cattttcatt	gatctcaaga	catcctaata	tcccttttgt	ttttttgttc	gacttactgg	107340
ttattcaaga	gtgtctttat	ttctgcataat	ttgtaaaattt	tccaaaaaag	tttttctttc	107400
tttttttttt	gagaaaagggt	cttgctctgt	cgccagggt	ggagaatgg	ggtgcacaat	107460
cttgctctac	tgcaacctct	gcctcccggt	ttcaagtgat	cctcccacct	cagccttccc	107520
agtagctggg	attacaggca	cacaccacca	cacctggcta	atttttgtat	tttagcttta	107580
acgtgctggg	cagactggtc	tcgaattcct	gacctcaggt	gatctgccc	ccttggcctc	107640
ccaaagcact	gggattacag	gcgtgaaaca	ccatgcccag	cccccaattt	ttttttttta	107700
atagagagaa	ggtctcactc	aagcccaggc	tggtcttgaa	ctcctgagct	caagctgtca	107760
tcctctctcg	gcctcccaag	gtgctgagat	tacagggtgt	agtcacagta	cctggccttc	107820
ttccaagact	ttaaaaatgc	catcttggct	gggcacgggt	gctcacgcct	gtaatccag	107880
cactttggga	ggccgaggtg	ggcagatcac	gaggtcagga	gatcaagacc	accctggcta	107940
acatgggtgaa	accctgtctc	tactaaaaat	acaaaaaatt	aaccagggtg	ggtggcagg	108000
gcctgtagtc	ccagctactc	gggaagctga	agcaggagaa	tggtggtgaa	ccgggaggtg	108060
gagcttgag	tgagctgaga	tcacaccact	gtactccagc	ctgggcaaca	gtgcgagact	108120
ccgtctcaaa	aaaaaaaaaa	aaaatgtcat	ctcactgcct	tctggtccaa	tagtttctga	108180
tgagaaattg	gctgttaata	ttattgagga	acattttatat	attgactagt	cacttgtctc	108240
ttgtctgttt	aggagattct	ctatctttgg	gtttcagcag	tttgattata	atgtatcagt	108300
gtggatccct	caatttataa	gctacttggg	gttcatttga	cttcttggat	gtgtaaattc	108360
atgtctttca	ttaaatttgc	aaagtttcag	ctactattct	ttgcatcttg	aaatactagt	108420
tttgtttctt	tctgtctgtt	tgccgcttat	ggaactttat	gcatacattg	atgtgcttca	108480
tggtgtagca	caggctccctt	gggtcttagg	catttttctt	tgttcttttt	ttctttctgc	108540
tcctcatttt	ggataaattc	agctgacctg	tcctcaagtt	cactgtttct	ttcttcttcc	108600
ttctcaaata	tgctgttgaa	acttctgggtg	aaattttcac	tacagttact	gtacttttta	108660
gctccaaagt	ttctatttgg	tttctttctg	tagtaattat	cactttacta	gtattctcta	108720
tttgggtaga	catggttctt	ttgttttctt	ttagtctatt	atccatgggt	tcctttattt	108780
ttaaatttct	ttttatttag	ttattaattt	tttttttttt	tgaagcgggg	tttcaactct	108840
gtcaccagg	ctggcaggca	acgtcacaaat	cttggctcac	tacaacctcc	gcctcctggg	108900
ttcaagtgat	tctcctgcct	cagcctccca	agtagctggg	attataggca	tgtgccacca	108960
caccaccta	attttttggt	tttttagtag	aaactgggtt	tcaccacatt	ggccagactg	109020
gtcttaact	actaacctca	ggtgatctgt	ccgcctcagc	ctcccaaaat	gctgggatta	109080
cagatgtgag	ccactgtgcc	cagcctcttt	tttttagtga	tttaaggtaa	ttgattgaaa	109140
gtttttgtct	agtcattcaa	atgtctaggg	ttcctcagga	acagtctcta	ttaatctctt	109200
tatttttaaa	aaattttttt	taattttctt	tttttttttag	atggagtctc	actctatagc	109260
ctaggctgga	gtgcaatggc	ttgatcttgg	ctcactgcaa	cctctgcctc	ctgggttcaa	109320
gcgattctcc	tgcttcagcc	tctgagtag	ctgggactat	aggtgcgtgc	caccactcct	109380
ggctaatttt	ttgtattttc	agtagagaca	tggttttggc	gtgttagcca	ggatggcttc	109440
gatctcgtga	cctcatgata	ctcctgcctc	ggcctcccaa	agtgcctgaa	ttacagggtg	109500
gagccaccgc	gccccagcta	tttttttatt	tttgagacaa	agtctccctc	tctcaccag	109560
gctgtagtgc	agtggcacaa	ccctggcaca	ctgcagcctt	aaccgtccag	gcttaagtga	109620
gtctccacc	ttagtctcct	gagtagctag	aactacaagc	atgtgccacc	atgcctggct	109680
ggttggtgtg	ttactgtttt	agacacaggg	tcttgctaca	tttctctgac	tggtcttgaa	109740
ctcctgggct	caagcagtea	tcccaccttg	gcctcccaag	gtgttgagat	tacagggtgtg	109800
agccaccgca	cccgccctgt	taattttctt	atttccgggtg	aatgggccac	actttcttgt	109860
ttctttgcat	gccttgtaat	tttttgttga	aacctgcaca	atttgaagat	gataatgtgg	109920
ttactttgaa	aatcagatcc	tccgccccct	gcagggttca	ttgttgctgt	ttgttggtga	109980
ttgtcgtttc	tcgtttgttt	agttactttc	ctgacctttt	ttaaataaaga	ctatattctg	110040
tcagggtgtg	ttgtttctgt	tcttttaggt	tagtggttag	cttgtgcttt	gaaagagatt	110100
tctttaaata	tctagtggca	aaaaggataa	agaggccggg	cgagtggtgt	cacgcctgta	110160
atgctaggac	tttgggaagt	ggaggcgggt	ggatcacttg	aggtcaggag	tttaagatca	110220
gcctggccag	tatggtgaaa	ccctgtctct	actaaaaata	caaaaaattaa	ccgggcattg	110280
tgccacctgc	ctgtagtccc	agctactggg	aagactgagg	caggagaatc	gcttcaatcc	110340
agggggcgga	ggttgagtg	agctgagatt	gcgccattgc	actccagcct	gggcaacaga	110400
gcgagactct	gtctcaataa	aaaaaaaaaa	aaaaaggata	aagagtgtct	tccatccttt	110460
ccaggttgcc	tctgtactgg	ggcaagtcct	tcagtgtccg	ccaggctgtt	cacggctttt	110520
cctcagcctt	tacttctcgc	tcccatggag	cctaaggatg	aaccagaggt	gaaagttagg	110580

ggcctcctca	ggtgtttctg	agccctgtc	tagccccagc	tgtgtgcatg	gccttctgga	110640
tttccaagca	tgaacaggag	ctttccaaag	cccttagacc	ttcatgtagc	tcttttccca	110700
gcctcttctt	tcctaggctt	ttctgtcagc	tctttgcccc	tctgttgttg	tccctcccc	110760
acaacttcag	gtagtatcta	cctgtaaatg	ccttcaggcc	aggcgcggtg	gctcatacct	110820
gttatcccag	cactttggga	ggccgaggcg	ggtgaattgc	ttgaggtcag	gagttcgaga	110880
ccagcctggc	caacatgggtg	aagccccgtc	tctagtaaaa	atacaaaaat	tagctgggcg	110940
tgggtgggtgc	ctgtaatctc	agctactcgg	gaggctgaag	caggagaatt	gcttgagcct	111000
gggaggcgga	ggttgcaagt	agctgagatc	gtgccattgc	actccagcct	gggcgacaga	111060
gtgagactcc	atctcgggga	aaaaaaaaaa	aaaaaaatgc	catcaacagc	acgaccctgg	111120
aggctgcccc	agccctgaga	gagttcgagg	gggtgaaaca	aaggcaagcc	cttcagggag	111180
acactagaaa	gatccaaatg	cataagcagg	attccttgag	aaaaggctcg	tatcatccct	111240
tctgacacca	gcaagccaca	tcagaaatac	aggttgcctt	ccccatggct	acatgtgagc	111300
tggtagtagt	ggctgagcag	aaatagcccc	gctgtcctcc	tgaaattttag	caggggtctta	111360
cttcattgag	cagtcattctg	gttcgtagac	accagagtta	cagaaaagtt	tattgggagg	111420
ttttgacagt	ttaatagaaa	aaagtttatt	gtgacagttt	tgacagctga	atagaaaaaa	111480
gtttactgtg	acagttttga	cagcagaata	gttgccttgc	tggagagacg	gatcctttgga	111540
gctgccaaact	ccatcatttt	ggtgatattc	agctctgttg	ctgaattttt	agctatgctg	111600
ttttaagtta	ttttcttagt	ggttgctcta	gagatgacaa	tgtgcatctt	taacttacca	111660
caatgtactt	cagattatta	ctaacttaac	acttaaagta	cagcattttt	ttttttatgg	111720
agtttcactc	tgtcaccag	gctggagtgc	aatgggtgtga	tctcggtcca	ctgcaacctc	111780
cgctcccag	gttcacgcca	ttctcctgcc	tcagcctcct	gagtagctgg	gactacaggc	111840
acccccacca	caccgggcta	attttgatt	tttagtagag	atgaggtttc	accatgttgg	111900
tcaggctggg	ctcgaactgc	tgacctcagg	tgatccgccc	atcttggcct	cccaaagtgc	111960
tgggattaca	ggtgtgagcg	actgcactga	gcttaagtat	ggcaacgtgt	ctataacata	112020
gatctacttc	ggtgtactta	tgacatagtt	ccccctccat	tttcttatag	cacagtccca	112080
acctcccttt	tcctctgaca	tagttccatc	ctccctcctc	ctatgacgtc	ctccctcttc	112140
ctctggcata	gctccatcct	cccttctcct	atgacacagc	tccatcctcc	cttctcctct	112200
gacacagctc	catcctccct	tctcctatga	cacagctcca	tcttcccttc	tctctgaca	112260
tagctccatc	ctcccttctc	ctatgtcata	gctccatcct	cccttctcct	ctgacacagc	112320
tccatccttc	cttctcctct	ggcatagctc	catcctccct	tctcctatga	cacagctcca	112380
tcctcccttc	tcctatgaca	cagctccatc	ctcccttctc	ctatgacaca	gctccatcct	112440
cccttctcct	atgacacagc	tccatcctcc	cttctcctct	ggcatagctc	catcctccct	112500
tctcctctga	catagctcca	tcttcccttc	tctctgaca	tagctccatc	ctccctcttc	112560
ctctgacata	gctccatcct	cccttctcct	ctgacatagc	tccatcctcc	cttctcctct	112620
gacatagctc	catcctccct	tctcctctga	catagttcca	tcttcccttg	tctctgaca	112680
tagctccatc	ctcccttctc	ctctgacata	gctccatccc	ctcttctcct	tcagtatta	112740
ttggcatata	tacatttatg	tatgttataa	cttcagctct	tcagcgttat	aattattgct	112800
tcaaaagtat	tttgaagaaa	gttgccctgga	ggcagtggtt	tatgccttta	actccagcac	112860
ttttgggggc	tgagggtggc	agatcgcttg	agccaggggg	ttggagacca	gcctgggcaa	112920
catgacgaaa	cccattctcca	ccaaaattac	aaaaaattag	tctggcatgg	tggcacgcgc	112980
ctgtagtccc	agctatttgg	gggaggatcc	cagctaaggt	gggaggatca	cttgagcctg	113040
ggaagtcaag	gctgcagtga	gctgagattg	tgccactgca	ctccagcctg	ggtgcagatc	113100
ttatctcaga	agtaaaggga	ctaggaatgg	tggcttttat	ctctaattccc	agcactttgg	113160
gaggctgagg	tgagtggatc	accggaggtc	aggagtttaa	gaccagcctg	gccaacatgg	113220
tgaaaccctg	tctctactaa	aaatacaaaa	agtagccggg	tgtggtggtg	ggtgtctgta	113280
atcccagcta	ctcgggaggg	tgaggcaaga	gaatcgcttg	aacctgggaa	gcggaggttg	113340
cagtgcgcaa	gatgcaccca	ctgcattaca	gcctagatga	cagagcgaga	ctctgcctaa	113400
aaaaaaaaaa	aaaaagaaaa	gaaaagaaat	taagatctag	acactgtggt	tcatgcctgt	113460
aatcccaaaag	ccttggggagg	ccaaggcagg	aggatcactt	gaggccagga	gttcaacacc	113520
agcctgggca	acatagcgag	actccatctc	tatttataaa	agaaagaaat	tcaaagagaa	113580
aaaaagtata	ctgttttttt	tgtatcatcc	atattttacc	tttctttttt	ttgccccctt	113640
ttctttcctg	tgaatttgag	ttactgtcta	gtgtcatctt	cttttagtct	gaagaacttc	113700
atttagaatt	tttttttttt	tttgagacaa	agtctcactg	tgttgcccag	gctggagtgc	113760
aatgggtgcag	tctcagatca	ctgcaacctc	tgccctccctg	gttagagtga	ttttcctgcc	113820
tcagcctccc	aagtagctga	gactgcaggc	acctgccacc	acccccagcc	aatttttttg	113880
gtatttttag	tagagacagg	gtttcactat	gttgccagg	ctggctctga	attcatgacc	113940
tcatgatctg	cctgtcctgg	cctcccaaaa	tgctgggatt	accatgagcc	accacgccca	114000
gccatttag	aattttcttt	tttttttttt	ttttgagatg	gggtctcgct	cttgtttccc	114060
aggctggagt	gcagtggcac	gatctcggtc	cactgcgagc	tccgcctccc	gggttcacgc	114120
cattctcctg	cctcagcctc	ccgagtagct	gggattacag	gcgcctgcca	ccacgcccac	114180
ctaatttttt	gtatttttag	gagagatggg	gtttcaccat	gttagccagg	atggctctga	114240

```

tctcctgacc tcgtgatccg cccgccttgg cctcccaaag tgctgggatt acaggcgtga 114300
gccaccgcgc ccggctagaa tttctttag tagacaggcttg ctagcaacca attcagtgtt 114360
tatttgggaa tgtctttatt tcagcttcat tttttgaagg atagtttagc tggctataga 114420
attattaatt gatcattctt ttcagtgttt aaaagtgtca tcatgctacc ttctgggttc 114480
cattgtttct gatgagaagt catctgtcaa attgtccctt tgtacttgaa gaattatctt 114540
tttttctctt gatgttttca agattttctc tttgtctttg gccttttagta gtttgtgatg 114600
tatctagggtg tggatctctt ggtgtgcac gtatttgggc ttcagtaagc ctcttagatt 114660
catagattaa tgttttgttt tgttttacca aatttggaga gtttttactc atcatttcaa 114720
caaatttttt tcttgcctct ctctcatctc cttttgggag taccactgca tgtatgttgg 114780
tgtgcgttct cta 114793

```

```

<210> SEQ ID NO:4
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

```

```

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

```

```

<400> SEQ ID NO:4
cacaggttca gcatgtttgt gcgtc 25

```

```

<210> SEQ ID NO:5
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

```

```

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

```

```

<400> SEQ ID NO:5
cacagtcctt gctggcctct gtcta 25

```

```

<210> SEQ ID NO:6
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

```

```

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

```

```

<400> SEQ ID NO:6
caggacatct ccatcaagag gctgc 25

```

```

<210> SEQ ID NO:7
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

```

```

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

```

```

<400> SEQ ID NO:7
aataagaggg ggccaggatc agtgc 25

```

```

<210> SEQ ID NO:8
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

```

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:8  
gtgaatggca tcctggagag 20

<210> SEQ ID NO:9  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:9  
gtctccaggc agctcaacag 20

<210> SEQ ID NO:10  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:10  
accctgtccc tcctgtctga 20

<210> SEQ ID NO:11  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:11  
agaccctaag atgttcggag 20

<210> SEQ ID NO:12  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:12  
gatgacctgt gtgagttgcg 20

<210> SEQ ID NO:13  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:13  
cgcaactcac acaggtcatc 20

<210> SEQ ID NO:14  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:14  
ggagtcaggt caaaggatgc

20

<210> SEQ ID NO:15  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:15  
gcaccccttg acctgactcc

20

<210> SEQ ID NO:16  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:16  
ggtctgaaac gtgatctggg

20

<210> SEQ ID NO:17  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:17  
cccagatcac gtttcagacc

20

<210> SEQ ID NO:18  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:18  
cgatgatgtg tgggttctcc

20

<210> SEQ ID NO:19  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:19  
ggagaacccca cacatcatcg 20

<210> SEQ ID NO:20  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:20  
cgtgtctgag aagtcagcc 20

<210> SEQ ID NO:21  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:21  
ggctggactt ctcagacag 20

<210> SEQ ID NO:22  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:22  
acagcatctt ctccagcac 20

<210> SEQ ID NO:23  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:23  
agtcctctgg ctttgagtg 20

<210> SEQ ID NO:24  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:24  
tgtgcgtgga gaagatgctg 20



<210> SEQ ID NO:25  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:25  
ggctggaaag ggaagtctac

20

<210> SEQ ID NO:26  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:26  
tggttcagggt gctcttgggg

20

<210> SEQ ID NO:27  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:27  
cgtgaagcag gagttgagcc

20

<210> SEQ ID NO:28  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:28  
atcttgctct gggcttcccc

20

<210> SEQ ID NO:29  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

<220> FEATURE:  
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:29  
cactgcaaag ccagaggact

20

<210> SEQ ID NO:30  
<211> LENGTH: 20  
<212> TYPE: DNA  
<213> ORGANISM:Artificial Sequence

```

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:30
ataagcaaga cgacgacctc
20

<210> SEQ ID NO:31
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:31
ctattctggtt ggggtgggttc
20

<210> SEQ ID NO:32
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:32
cgtgcctcct gtgcttacct
20

<210> SEQ ID NO:33
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:33
cagaccccaa ggtagctcag
20

<210> SEQ ID NO:34
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM:Artificial Sequence

<220> FEATURE:
<223> OTHER INFORMATION: oligonucleotide

<400> SEQ ID NO:34
ggaagaccca gagcaagatc
20

<210> SEQ ID NO:35
<211> LENGTH: 780
<212> TYPE: PRT
<213> ORGANISM:Dictyostelium discoideum

<400> SEQ ID NO:35
Met Lys Phe Tyr Ile Glu Asp Leu Leu Val Tyr Phe Pro Tyr Ser Tyr
1      5      10      15
Ile Tyr Pro Glu Gln Tyr Ser Tyr Met Val Ala Leu Lys Arg Ser Leu
20      25      30

```

Asp Asn Gly Gly Pro Cys Ile Leu Glu Met Pro Ser Gly Thr Gly Lys  
 35 40 45  
 Thr Val Ser Leu Leu Ser Leu Ile Ser Ser Tyr Gln Val Lys Asn Pro  
 50 55 60  
 Ser Ile Lys Leu Ile Tyr Cys Ser Arg Thr Val Pro Glu Ile Glu Gln  
 65 70 75 80  
 Ala Thr Glu Glu Ala Arg Arg Val Leu Gln Tyr Arg Asn Ser Glu Met  
 85 90 95  
 Gly Glu Glu Ser Pro Lys Thr Leu Cys Met Ser Met Ser Ser Arg Arg  
 100 105 110  
 Asn Leu Cys Ile Gln Pro Arg Val Ser Glu Glu Arg Asp Gly Lys Val  
 115 120 125  
 Val Asp Ala Leu Cys Arg Glu Leu Thr Ser Ser Trp Asn Arg Glu Ser  
 130 135 140  
 Pro Thr Ser Glu Lys Cys Lys Phe Phe Glu Asn Phe Glu Ser Asn Gly  
 145 150 155 160  
 Lys Glu Ile Leu Leu Glu Gly Val Tyr Ser Leu Glu Asp Leu Lys Glu  
 165 170 175  
 Tyr Gly Leu Lys His Gln Met Cys Pro Tyr Phe Leu Ser Arg His Met  
 180 185 190  
 Leu Asn Phe Ala Asn Ile Val Ile Phe Ser Tyr Gln Tyr Leu Leu Asp  
 195 200 205  
 Pro Lys Ile Ala Ser Leu Ile Ser Ser Ser Phe Pro Ser Asn Ser Ile  
 210 215 220  
 Val Val Phe Asp Glu Ala His Asn Ile Asp Asn Val Cys Ile Asn Ala  
 225 230 235 240  
 Leu Ser Ile Asn Ile Asp Asn Lys Leu Leu Asp Thr Ser Ser Lys Asn  
 245 250 255  
 Ile Ala Lys Ile Asn Lys Gln Ile Glu Asp Ile Lys Lys Val Asp Glu  
 260 265 270  
 Lys Arg Leu Lys Asp Glu Tyr Gln Arg Leu Val Asn Gly Leu Ala Arg  
 275 280 285  
 Ser Gly Ser Thr Arg Ala Asp Glu Thr Thr Ser Asp Pro Val Leu Pro  
 290 295 300  
 Asn Asp Val Ile Gln Glu Ala Val Pro Gly Asn Ile Arg Lys Pro Ser  
 305 310 315 320  
 Ile Phe Ile Ser Leu Leu Arg Arg Val Val Asp Tyr Leu Arg Glu Pro  
 325 330 335  
 Asp Lys Ser Arg Leu Lys Ser Gln Met Leu Leu Ser Glu Ser Pro Leu  
 340 345 350  
 Ala Phe Leu Gln Gly Leu Tyr His Ala Thr Gln Ile Ser Ser Arg Thr  
 355 360 365  
 Leu Arg Phe Cys Ser Ser Arg Leu Ser Ser Leu Leu Arg Thr Leu Arg  
 370 375 380  
 Ile Asn Asp Val Asn Gln Phe Ser Gly Ile Ser Leu Ile Ala Asp Phe  
 385 390 395 400  
 Ala Thr Leu Val Gly Thr Tyr Asn Asn Gly Phe Leu Ile Ile Ile Glu  
 405 410 415  
 Pro Tyr Tyr Gln Arg Gln Asn Asn Thr Tyr Asp Gln Ile Phe Gln Phe  
 420 425 430  
 Cys Cys Leu Asp Ala Ser Ile Gly Met Lys Pro Ile Phe Asp Lys Tyr  
 435 440 445  
 Arg Ser Val Val Ile Thr Ser Gly Thr Leu Ser Pro Leu Asp Ile Tyr  
 450 455 460  
 Thr Lys Met Leu Asn Phe Arg Pro Thr Val Val Glu Arg Leu Thr Met  
 465 470 475 480  
 Ser Leu Asn Arg Asn Cys Ile Cys Pro Cys Ile Leu Thr Arg Gly Ser  
 485 490 495  
 Asp Gln Ile Ser Ile Ser Thr Lys Phe Asp Val Arg Ser Asp Thr Ala  
 500 505 510

Val Val Arg Asn Tyr Gly Ala Leu Leu Val Glu Val Ser Ala Ile Val  
 515 520 525  
 Pro Asp Gly Ile Ile Cys Phe Phe Thr Ser Tyr Ser Tyr Met Glu Gln  
 530 535 540  
 Ile Val Ser Val Trp Asn Glu Met Gly Leu Leu Asn Asn Ile Leu Thr  
 545 550 555 560  
 Asn Lys Leu Ile Phe Val Glu Thr Ser Asp Pro Ala Glu Ser Ala Leu  
 565 570 575  
 Ala Leu Gln Asn Tyr Lys Lys Ala Cys Asp Ser Gly Arg Gly Ala Val  
 580 585 590  
 Leu Leu Ser Val Ala Arg Gly Lys Val Ser Glu Gly Ile Asp Phe Asp  
 595 600 605  
 Asn Gln Tyr Gly Arg Cys Val Ile Leu Tyr Gly Ile Pro Tyr Ile Asn  
 610 615 620  
 Thr Glu Ser Lys Val Leu Arg Ala Arg Leu Glu Phe Leu Arg Asp Arg  
 625 630 635 640  
 Tyr Gln Ile Arg Glu Asn Glu Phe Leu Thr Phe Asp Ala Met Arg Thr  
 645 650 655  
 Ala Ser Gln Cys Val Gly Arg Val Ile Arg Gly Lys Ser Asp Tyr Gly  
 660 665 670  
 Ile Met Ile Phe Ala Asp Lys Arg Tyr Asn Arg Leu Asp Lys Arg Asn  
 675 680 685  
 Lys Leu Pro Gln Trp Ile Leu Gln Phe Cys Gln Pro Gln His Leu Asn  
 690 695 700  
 Leu Ser Thr Asp Met Ala Ile Ser Leu Ser Lys Thr Phe Leu Arg Glu  
 705 710 715 720  
 Met Gly Gln Pro Phe Ser Arg Glu Glu Gln Leu Gly Lys Ser Leu Trp  
 725 730 735  
 Ser Leu Glu His Val Glu Lys Gln Ser Thr Ser Lys Pro Pro Gln Gln  
 740 745 750  
 Gln Asn Ser Ala Ile Asn Ser Thr Ile Thr Thr Ser Thr Thr Thr Thr  
 755 760 765  
 Thr Thr Thr Ser Thr Ile Ser Glu Thr His Leu Thr  
 770 775 780

&lt;210&gt; SEQ ID NO:36

&lt;211&gt; LENGTH: 778

&lt;212&gt; TYPE: PRT

<213> ORGANISM: *S. cerevisiae*

&lt;400&gt; SEQ ID NO:36

Met Lys Phe Tyr Ile Asp Asp Leu Pro Val Leu Phe Pro Tyr Pro Lys  
 1 5 10 15  
 Ile Tyr Pro Glu Gln Tyr Asn Tyr Met Cys Asp Ile Lys Lys Thr Leu  
 20 25 30  
 Asp Val Gly Gly Asn Ser Ile Leu Glu Met Pro Ser Gly Thr Gly Lys  
 35 40 45  
 Thr Val Ser Leu Leu Ser Leu Thr Ile Ala Tyr Gln Met His Tyr Pro  
 50 55 60  
 Glu His Arg Lys Ile Ile Tyr Cys Ser Arg Thr Met Ser Glu Ile Glu  
 65 70 75 80  
 Lys Ala Leu Val Glu Leu Glu Asn Leu Met Asp Tyr Arg Thr Lys Glu  
 85 90 95  
 Leu Gly Tyr Gln Glu Asp Phe Arg Gly Leu Gly Leu Thr Ser Arg Lys  
 100 105 110  
 Asn Leu Cys Leu His Pro Glu Val Ser Lys Glu Arg Lys Gly Thr Val  
 115 120 125  
 Val Asp Glu Lys Cys Arg Arg Met Thr Asn Gly Gln Ala Lys Arg Lys  
 130 135 140  
 Leu Glu Glu Asp Pro Glu Ala Asn Val Glu Leu Cys Glu Tyr His Glu

145	150	155	160
Asn Leu Tyr Asn Ile Glu Val Glu Asp Tyr Leu Pro Lys Gly Val Phe			
	165	170	175
Ser Phe Glu Lys Leu Leu Lys Tyr Cys Glu Glu Lys Thr Leu Cys Pro			
	180	185	190
Tyr Phe Ile Val Arg Arg Met Ile Ser Leu Cys Asn Ile Ile Ile Tyr			
	195	200	205
Ser Tyr His Tyr Leu Leu Asp Pro Lys Ile Ala Glu Arg Val Ser Asn			
	210	215	220
Glu Val Ser Lys Asp Ser Ile Val Ile Phe Asp Glu Ala His Asn Ile			
225	230	235	240
Asp Asn Val Cys Ile Glu Ser Leu Ser Leu Asp Leu Thr Thr Asp Ala			
	245	250	255
Leu Arg Arg Ala Thr Arg Gly Ala Asn Ala Leu Asp Glu Arg Ile Ser			
	260	265	270
Glu Val Arg Lys Val Asp Ser Gln Lys Leu Gln Asp Glu Tyr Glu Lys			
	275	280	285
Leu Val Gln Gly Leu His Ser Ala Asp Ile Leu Thr Asp Gln Glu Glu			
290	295	300	
Pro Phe Val Glu Thr Pro Val Leu Pro Gln Asp Leu Leu Thr Glu Ala			
305	310	315	320
Ile Pro Gly Asn Ile Arg Arg Ala Glu His Phe Val Ser Phe Leu Lys			
	325	330	335
Arg Leu Ile Glu Tyr Leu Lys Thr Arg Met Lys Val Leu His Val Ile			
	340	345	350
Ser Glu Thr Pro Lys Ser Phe Leu Gln His Leu Lys Gln Leu Thr Phe			
	355	360	365
Ile Glu Arg Lys Pro Leu Arg Phe Cys Ser Glu Arg Leu Ser Leu Leu			
	370	375	380
Val Arg Thr Leu Glu Val Thr Glu Val Glu Asp Phe Thr Ala Leu Lys			
385	390	395	400
Asp Ile Ala Thr Phe Ala Thr Leu Ile Ser Thr Tyr Glu Glu Gly Phe			
	405	410	415
Leu Leu Ile Ile Glu Pro Tyr Glu Ile Glu Asn Ala Ala Val Pro Asn			
	420	425	430
Pro Ile Met Arg Phe Thr Cys Leu Asp Ala Ser Ile Ala Ile Lys Pro			
	435	440	445
Val Phe Glu Arg Phe Ser Ser Val Ile Ile Thr Ser Gly Thr Ile Ser			
	450	455	460
Pro Leu Asp Met Tyr Pro Arg Met Leu Asn Phe Lys Thr Val Leu Gln			
465	470	475	480
Lys Ser Tyr Ala Met Thr Leu Ala Lys Lys Ser Phe Leu Pro Met Ile			
	485	490	495
Ile Thr Lys Gly Ser Asp Gln Val Ala Ile Ser Ser Arg Phe Glu Ile			
	500	505	510
Arg Asn Asp Pro Ser Ile Val Arg Asn Tyr Gly Ser Met Leu Val Glu			
	515	520	525
Phe Ala Lys Ile Thr Pro Asp Gly Met Val Val Phe Phe Pro Ser Tyr			
	530	535	540
Leu Tyr Met Glu Ser Ile Val Ser Met Trp Gln Thr Met Gly Ile Leu			
545	550	555	560
Asp Glu Val Trp Lys His Lys Leu Ile Leu Val Glu Thr Pro Asp Ala			
	565	570	575
Gln Glu Thr Ser Leu Ala Leu Glu Thr Tyr Arg Lys Ala Cys Ser Asn			
	580	585	590
Gly Arg Gly Ala Ile Leu Leu Ser Val Ala Arg Gly Lys Val Ser Glu			
	595	600	605
Gly Ile Asp Phe Asp His Gln Tyr Gly Arg Thr Val Leu Met Ile Gly			
610	615	620	

```

Ile Pro Phe Gln Tyr Thr Glu Ser Arg Ile Leu Lys Ala Arg Leu Glu
625                      630                      635                      640
Phe Met Arg Glu Asn Tyr Arg Ile Arg Glu Asn Asp Phe Leu Ser Phe
                      645                      650                      655
Asp Ala Met Arg His Ala Ala Gln Cys Leu Gly Arg Val Leu Arg Gly
                      660                      665                      670
Lys Asp Asp Tyr Gly Val Met Val Leu Ala Asp Arg Arg Phe Ser Arg
                      675                      680                      685
Lys Arg Ser Gln Leu Pro Lys Trp Ile Ala Gln Gly Leu Ser Asp Ala
690                      695                      700
Asp Leu Asn Leu Ser Thr Asp Met Ala Ile Ser Asn Thr Lys Gln Phe
705                      710                      715                      720
Leu Arg Thr Met Ala Gln Pro Thr Asp Pro Lys Asp Gln Glu Gly Val
                      725                      730                      735
Ser Val Trp Ser Tyr Glu Asp Leu Ile Lys His Gln Asn Ser Arg Lys
740                      745                      750
Asp Gln Gly Gly Phe Ile Glu Asn Glu Asn Lys Glu Gly Glu Gln Asp
755                      760                      765
Glu Asp Glu Asp Glu Asp Ile Glu Met Gln
770                      775

```

&lt;210&gt; SEQ ID NO:37

&lt;211&gt; LENGTH: 772

&lt;212&gt; TYPE: PRT

&lt;213&gt; ORGANISM:S. pombe

&lt;400&gt; SEQ ID NO:37

```

Met Lys Phe Tyr Ile Asp Asp Leu Pro Ile Leu Phe Pro Tyr Pro Arg
1                      5                      10                      15
Ile Tyr Pro Glu Gln Tyr Gln Tyr Met Cys Asp Leu Lys His Ser Leu
20                      25                      30
Asp Ala Gly Gly Ile Ala Leu Leu Glu Met Pro Ser Gly Thr Gly Lys
35                      40                      45
Thr Ile Ser Leu Leu Ser Leu Ile Val Ser Tyr Gln Gln His Tyr Pro
50                      55                      60
Glu His Arg Lys Leu Ile Tyr Cys Ser Arg Thr Met Ser Glu Ile Asp
65                      70                      75                      80
Lys Ala Leu Ala Glu Leu Lys Arg Leu Met Ala Tyr Arg Thr Ser Gln
85                      90                      95
Leu Gly Tyr Glu Glu Pro Phe Leu Gly Leu Gly Leu Thr Ser Arg Lys
100                      105                      110
Asn Leu Cys Leu His Pro Ser Val Arg Arg Glu Lys Asn Gly Asn Val
115                      120                      125
Val Asp Ala Arg Cys Arg Ser Leu Thr Ala Gly Phe Val Arg Glu Gln
130                      135                      140
Arg Leu Ala Gly Met Asp Val Pro Thr Cys Glu Phe His Asp Asn Leu
145                      150                      155                      160
Glu Asp Leu Glu Pro His Ser Leu Ile Ser Asn Gly Val Trp Thr Leu
165                      170                      175
Asp Asp Ile Thr Glu Tyr Gly Glu Lys Thr Thr Arg Cys Pro Tyr Phe
180                      185                      190
Thr Val Arg Arg Met Leu Pro Phe Cys Asn Val Ile Ile Tyr Ser Tyr
195                      200                      205
His Tyr Leu Leu Asp Pro Lys Ile Ala Glu Arg Val Ser Arg Glu Leu
210                      215                      220
Ser Lys Asp Cys Ile Val Val Phe Asp Glu Ala His Asn Ile Asp Asn
225                      230                      235                      240
Val Cys Ile Glu Ser Leu Ser Ile Asp Leu Thr Glu Ser Ser Leu Arg
245                      250                      255

```

Lys Ala Ser Lys Ser Ile Leu Ser Leu Glu Gln Lys Val Asn Glu Val  
 260 265 270  
 Lys Gln Ser Asp Ser Lys Lys Leu Gln Asp Glu Tyr Gln Lys Leu Val  
 275 280 285  
 Arg Gly Leu Gln Asp Ala Asn Ala Ala Asn Asp Glu Asp Gln Phe Met  
 290 295 300  
 Ala Asn Pro Val Leu Pro Glu Asp Val Leu Lys Glu Ala Val Pro Gly  
 305 310 315 320  
 Asn Ile Arg Arg Ala Glu His Phe Ile Ala Phe Leu Lys Arg Phe Val  
 325 330 335  
 Glu Tyr Leu Lys Thr Arg Met Lys Val Leu His Val Ile Ala Glu Thr  
 340 345 350  
 Pro Thr Ser Phe Leu Gln His Val Lys Asp Ile Thr Phe Ile Asp Lys  
 355 360 365  
 Lys Pro Leu Arg Phe Cys Ala Glu Arg Leu Thr Ser Leu Val Arg Ala  
 370 375 380  
 Leu Gln Ile Ser Leu Val Glu Asp Phe His Ser Leu Gln Gln Val Val  
 385 390 395 400  
 Ala Phe Ala Thr Leu Val Ala Thr Tyr Glu Arg Gly Phe Ile Leu Ile  
 405 410 415  
 Leu Glu Pro Phe Glu Thr Glu Asn Ala Thr Val Pro Asn Pro Ile Leu  
 420 425 430  
 Arg Phe Ser Cys Leu Asp Ala Ser Ile Ala Ile Lys Pro Val Phe Glu  
 435 440 445  
 Arg Phe Arg Ser Val Ile Ile Thr Ser Gly Thr Leu Ser Pro Leu Asp  
 450 455 460  
 Met Tyr Pro Lys Met Leu Gln Phe Asn Thr Val Met Gln Glu Ser Tyr  
 465 470 475 480  
 Gly Met Ser Leu Ala Arg Asn Cys Phe Leu Pro Met Val Val Thr Arg  
 485 490 495  
 Gly Ser Asp Gln Val Ala Ile Ser Ser Lys Phe Glu Ala Arg Asn Asp  
 500 505 510  
 Pro Ser Val Val Arg Asn Tyr Gly Asn Ile Leu Val Glu Phe Ser Lys  
 515 520 525  
 Ile Thr Pro Asp Gly Leu Val Ala Phe Phe Pro Ser Tyr Leu Tyr Leu  
 530 535 540  
 Glu Ser Ile Val Ser Ser Trp Gln Ser Met Gly Ile Leu Asp Glu Val  
 545 550 555 560  
 Trp Lys Tyr Lys Leu Ile Leu Val Glu Thr Pro Asp Pro His Glu Thr  
 565 570 575  
 Thr Leu Ala Leu Glu Thr Tyr Arg Ala Ala Cys Ser Asn Gly Arg Gly  
 580 585 590  
 Ala Val Leu Leu Ser Val Ala Arg Gly Lys Val Ser Glu Gly Val Asp  
 595 600 605  
 Phe Asp His His Tyr Gly Arg Ala Val Ile Met Phe Gly Ile Pro Tyr  
 610 615 620  
 Gln Tyr Thr Glu Ser Arg Val Leu Lys Ala Arg Leu Glu Phe Leu Arg  
 625 630 635 640  
 Asp Thr Tyr Gln Ile Arg Glu Ala Asp Phe Leu Thr Phe Asp Ala Met  
 645 650 655  
 Arg His Ala Ala Gln Cys Leu Gly Arg Val Leu Arg Gly Lys Asp Asp  
 660 665 670  
 His Gly Ile Met Val Leu Ala Asp Lys Arg Tyr Gly Arg Ser Asp Lys  
 675 680 685  
 Arg Thr Lys Leu Pro Lys Trp Ile Gln Gln Tyr Ile Thr Glu Gly Ala  
 690 695 700  
 Thr Asn Leu Ser Thr Asp Met Ser Leu Ala Leu Ala Lys Lys Phe Leu  
 705 710 715 720  
 Arg Thr Met Ala Gln Pro Phe Thr Ala Ser Asp Gln Glu Gly Ile Ser  
 725 730 735

Trp Trp Ser Leu Asp Asp Leu Leu Ile His Gln Lys Lys Ala Leu Lys  
                   740                  745                  750  
 Ser Ala Ala Ile Glu Gln Ser Lys His Glu Asp Glu Met Asp Ile Asp  
                   755                  760                  765  
 Val Val Glu Thr  
                   770

<210> SEQ ID NO:38

<211> LENGTH: 760

<212> TYPE: PRT

<213> ORGANISM: Homo sapien

<400> SEQ ID NO:38

Met Lys Leu Asn Val Asp Gly Leu Leu Val Tyr Phe Pro Tyr Asp Tyr  
   1                  5                  10                  15  
 Ile Tyr Pro Glu Gln Phe Ser Tyr Met Arg Glu Leu Lys Arg Thr Leu  
                   20                  25                  30  
 Asp Ala Lys Gly His Gly Val Leu Glu Met Pro Ser Gly Thr Gly Lys  
                   35                  40                  45  
 Thr Val Ser Leu Leu Ala Leu Ile Met Ala Tyr Gln Arg Ala Tyr Pro  
                   50                  55                  60  
 Leu Glu Val Thr Lys Leu Ile Tyr Cys Ser Arg Thr Val Pro Glu Ile  
   65                  70                  75                  80  
 Glu Lys Val Ile Glu Glu Leu Arg Lys Leu Leu Asn Phe Tyr Glu Lys  
                   85                  90                  95  
 Gln Glu Gly Glu Lys Leu Pro Phe Leu Gly Leu Ala Leu Ser Ser Arg  
                   100                  105                  110  
 Lys Asn Leu Cys Ile His Pro Glu Val Thr Pro Leu Arg Phe Gly Lys  
                   115                  120                  125  
 Asp Val Asp Gly Lys Cys His Ser Leu Thr Ala Ser Tyr Val Arg Ala  
                   130                  135                  140  
 Gln Tyr Gln His Asp Thr Ser Leu Pro His Cys Arg Phe Tyr Glu Glu  
   145                  150                  155                  160  
 Phe Asp Ala His Gly Arg Glu Val Pro Leu Pro Ala Gly Ile Tyr Asn  
                   165                  170                  175  
 Leu Asp Asp Leu Lys Ala Leu Gly Arg Arg Gln Gly Trp Cys Pro Tyr  
                   180                  185                  190  
 Phe Leu Ala Arg Tyr Ser Ile Leu His Ala Asn Val Val Val Tyr Ser  
                   195                  200                  205  
 Tyr His Tyr Leu Leu Asp Pro Lys Ile Ala Asp Leu Val Ser Lys Glu  
                   210                  215                  220  
 Leu Ala Arg Lys Ala Val Val Val Phe Asp Glu Ala His Asn Ile Asp  
   225                  230                  235                  240  
 Asn Val Cys Ile Asp Ser Met Ser Val Asn Leu Thr Arg Arg Thr Leu  
                   245                  250                  255  
 Asp Arg Cys Gln Gly Asn Leu Glu Thr Leu Gln Lys Thr Val Leu Arg  
                   260                  265                  270  
 Ile Lys Glu Thr Asp Glu Gln Arg Leu Arg Asp Glu Tyr Arg Arg Leu  
                   275                  280                  285  
 Val Glu Gly Leu Arg Glu Ala Ser Ala Ala Arg Glu Thr Asp Ala His  
                   290                  295                  300  
 Leu Ala Asn Pro Val Leu Pro Asp Glu Val Leu Gln Glu Ala Val Pro  
   305                  310                  315                  320  
 Gly Ser Ile Arg Thr Ala Glu His Phe Leu Gly Phe Leu Arg Arg Leu  
                   325                  330                  335  
 Leu Glu Tyr Val Lys Trp Arg Leu Arg Val Gln His Val Val Gln Glu  
                   340                  345                  350  
 Ser Pro Pro Ala Phe Leu Ser Gly Leu Ala Gln Arg Val Cys Ile Gln  
                   355                  360                  365  
 Arg Lys Pro Leu Arg Phe Cys Ala Glu Arg Leu Arg Ser Leu Leu His



53

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/33065

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(7) : C12N 9/00, 9/10, 1/20; C12N 15/00; C07H 21/02, 21/04 US CL : 435/183, 193, 252.3, 320.1, 6; 536/23.1, 23.2 According to International Patent Classification (IPC) or to both national classification and IPC																								
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : 435/183, 193, 252.3, 320.1, 6; 536/23.1, 23.2  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EAST, STN, Medline, CAPLUS, BIOSIS, JPIO, PATOSWO, PATOSEP, SCISEARCH, EMBASE, search terms, helicase, NHL protein, mammalian, human, RAD3/ERCC2 gene family, SEQ ID NOs : 1 and 2																								
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>																								
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																						
X	US 5,843,737 A (CHEN et al) 01 December 1998, see entire document.	1																						
X, P	BAI et al, Overexpression of M68/DcR3 in human gastrointestinal tract tumors independent of gene amplification and its location in four-gene cluster. Proc. Natl. Acad. Sci. USA. 01 February 2000. Vol 97. No. 3, pages 1230-1235.	1-26																						
X	US 5,888,792 A (BANDMAN et al) 30 March 1999, see entire document.	1																						
Y, P	ZHOU et al. Pif1p Helicase, a Catalytic Inhibitor of Telomerase in Yeast. Science. 04 August 2000. Vol-289. pages 771-774.	1																						
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.																								
<table border="0"><tr><td>* Special categories of cited documents:</td><td>*T</td><td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td></tr><tr><td>*A</td><td>document defining the general state of the art which is not considered to be of particular relevance</td><td></td></tr><tr><td>*E</td><td>earlier document published on or after the international filing date</td><td>*X</td><td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td></tr><tr><td>*L</td><td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td><td>*Y</td><td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td></tr><tr><td>*O</td><td>document referring to an oral disclosure, use, exhibition or other means</td><td></td><td></td></tr><tr><td>*P</td><td>document published prior to the international filing date but later than the priority date claimed</td><td>*&amp;</td><td>document member of the same patent family</td></tr></table>			* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	*A	document defining the general state of the art which is not considered to be of particular relevance		*E	earlier document published on or after the international filing date	*X	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	*L	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	*O	document referring to an oral disclosure, use, exhibition or other means			*P	document published prior to the international filing date but later than the priority date claimed	*&	document member of the same patent family
* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																						
*A	document defining the general state of the art which is not considered to be of particular relevance																							
*E	earlier document published on or after the international filing date	*X	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone																					
*L	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																					
*O	document referring to an oral disclosure, use, exhibition or other means																							
*P	document published prior to the international filing date but later than the priority date claimed	*&	document member of the same patent family																					
Date of the actual completion of the international search 09 MARCH 2001		Date of mailing of the international search report 19 APR 2001																						
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized Officer PONNATHAPURA ACHUTAMURTHY Telephone No. (703) 308-0196																						

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/33065

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,466,576 A (SCHULZ et al) 14 November 1995, see entire document.	1-26

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/33065

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☒ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/33065

### BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s) 1-22 and 26, drawn to a purified DNA molecule encoding a mammalian NHL protein, vectors and host cells comprising said DNA, methods of expressing said DNA and the NHL protein.

Group II, claim(s) 23-25, drawn to an isolated molecule which comprises the nucleotide sequence as set forth in SEQ ID NO: 3.

The inventions listed as Groups I and II do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The technical relationship shared between the claims of groups I and II corresponds to a DNA molecule encoding a mammalian NHL (novel helicase-like) protein. Chen et al. (US Patent No: 5,843,737) teach a gene that encodes a multifunctional protein having helicase activity and hence the inventions do not share a special technical feature.